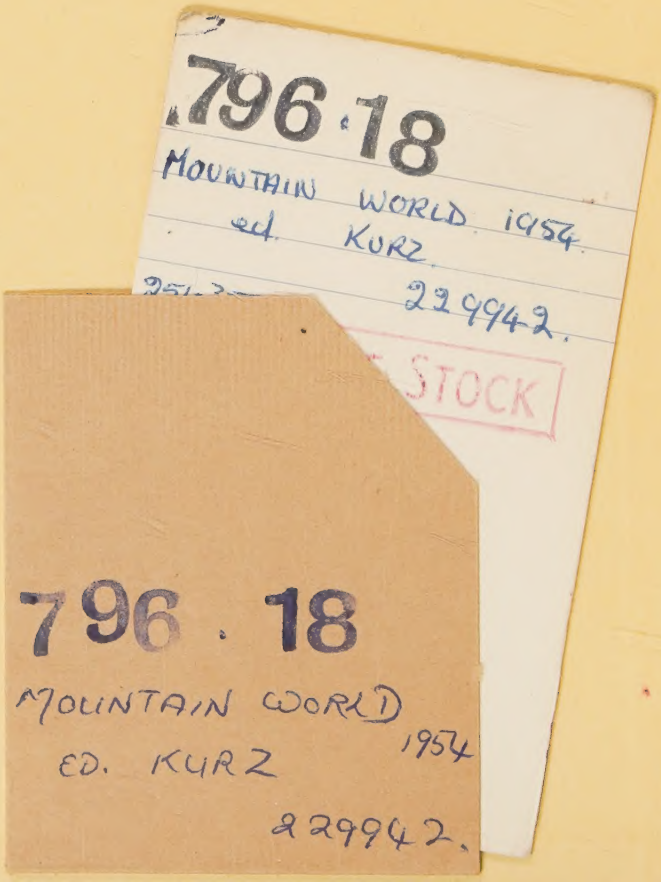
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THE MOUNTAIN WORLD

1954

EDITED BY

MARCEL KURZ

London

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CONTENTS

	Page
Preface	7
Forerunners to Everest. By Gabriel Chevalley and Raymond Lambert	9
Everest Ascended. By Sir John Hunt	19
Everest 1953. By Wilfrid Noyce	21
Manaslu, Japanese Expeditions 1952 and 1953. By M. Takagi	63
Expedition to Dhaulagiri, 1953. By Ruedi Schatz	71
Ascent of the Nun. By Pierre Vittoz	82
Nanga Parbat—an Historical Survey. By G. O. Dyhrenfurth	93
Nanga Parbat. By Karl M. Herrligkoffer	97
A Narrow Escape on K2. By Charles S. Houston M. D.	113
The Royal Peaks of Ruwenzori. By D. L. Busk	137
Baffin Island Expedition, 1953. Introduction by P. D. Baird	147
Seismic Examinations of Glaciers. By Hans Röthlisberger	149
Cumberland—a Paradise for Climbers. By Jürg Marmet	157
A Botanist in Arctic Mountains. By F. H. Schwarzenbach	163
Across the Mountains of North-Peary Land. By Erdhart Fränkl	169
The Ascent of Mount Shackleton. By John Haller	185
Impressions of the Werner Mountains. By Peter Bearth	187
Himalaya 1951–1952. By Marcel Kurz	189
Chronology of Himalayan Expeditions	222

MAPS AND SKETCHES

Everest Region. By E. Joller	26
Manaslu. By E. Joller	67
Dhaulagiri Region. By André Roch and E. Joller	74
Nun. By Pierre Vittoz and E. Joller	86
The Royal Peaks of Ruwenzori. By M. K. and E. Joller	142
Seismic Work. By E. Joller	150
Seismogram. Taken by John Röthlisberger	151
Baffin Island. By E. Joller	154
Penny Highland. By E. Joller	155
Camps and Summits on Baffin Island. By E. Joller	158
Grønland—Skandik. By E. Joller	170
Peary Land. By E. Fränkl and E. Joller	174

ILLUSTRATIONS

	Photographer	Plate	Caption Page
High above Pumori		1	17
View of the "Horseshoe"		2	17
South-west face of Everest		3/4	17
Three ridges radiate from the summit of Everest	*Indian Air Force*	5	18
Immediately below the summit pyramid		6	18
Above the summit		7	18
Lhotse and Makalu		8/9	18
Lhotse I and Lhotse II		10	18
Camp on Island Peak	*Royal*	11	48
The members of the expedition 1953	*Geographical*	12/13	48
Arête leading up to the summit of Everest	*Society*	14	49
View across Manaslu Glacier	*Japanese*	15	68
View from above Naike Saddle	*Alpine Club*	16	69
The north face of Dhaulagiri	*André Roch*	17	76
View of Nun	*Club Alpin Français*	18	77
The Moor's Head		19	96
The Hunza porters		20	96
Moslems from Tato	*German*	21/22	96
Fixed ropes on the Rakhiot Face	*Nanga Parbat*	23	97
Traverse to the east ridge	*expedition*	24	97
Summit view taken from Nanga Parbat		25	112
Hermann Buhl		26	112
Crossing Braldu River		27	113
On the Baltoro Glacier		28	113
Base Camp opposite K2	*Expedition*	29	128
Skyang Kangri	*photos*	30	128
The "Abruzzi Rib"		31	128
Charles S. Houston		32	129
Colonel Baird		33	148
Camp on Highway Glacier and work of sapper		34	149
Explosion		35	149
Equipment tent	*Swiss Foundation*	36	149
Air view of Mount Asgard	*Alpine Research*	37	160
Mount Asgard from the Highway Glacier		38	160
On the summit wall of Mount Asgard		39	160
Highway Glacier and Turner Glacier		40	161
Arctic bluebells *(Campanula rotundifolia)*	*Fritz Schwarzenbach*	41	168
Pioneer plants of the Arctic mountains	*Fritz Schwarzenbach*	42/43	168
Melandrium apetalum and *Campanula uniflora*	*Fritz Schwarzenbach*	44	168
View from the west of Friggs Fjord		45	176
View from the west of the Grönemarken Valley	*Geodetic Institute,*	46	176
View from the west of the Nord Glacier	*Copenhagen*	47/48	176
View from the west of the Sands Fjord		49/50	177
Werner Mountains	*P. Bearth*	51	180
Mount Shackleton	*John Haller*	52	181
South face of Macha Puchar	*Basil Goodfellow*	53	189
Porter's strike on the way to Nanda Devi	*Jean-Jacques Languepin*	54	189
Longstaff's Col–Nanda Khat	*Jean-Jacques Languepin*	55	208
Dunagiri and adjoining mountains	*Robert Walter*	56	208
Panch Chuli massif	*Kenneth Snelson*	57/58	209
Peaks adjoining Panch Chuli panorama	*Kenneth Snelson*	59/60	209
Nanda Devi from the south	*Arthur B. Emmons*	61	216
Nanda Devi from the east	*Jakub Bujak*	62	216
View from the Lassar-Darma watershed	*Kenneth Snelson*	63	217
Indrasan, Panjab	*R.D.I.C. Henderson*	64	217

PREFACE

In 1953 two further 8000-m. peaks were conquered: Everest, the "English mountain", probably almost 8900 m. (29,195 ft.) high, though its officially accepted height is 8840 m. (29,002 ft.), and Nanga Parbat, the "German mountain" (8125 m., 26,650 ft.). Their history in climbing terms is long and both peaks have claimed many victims. In both cases the final climb was the product of a new type of plan: a strong party besieged the mountain until it was possible to advance an assault team of two men to a camp high up on the mountain, from whence it was possible to reach the top. In the first case this consisted of the New Zealander, Hillary, and the Sherpa Tensing, and in the second case it was the Austrian climber Buhl who made a successful solitary ascent. In both cases photographs taken on the summit removed the doubts of any possible sceptics, and in Buhl's case his summit photograph was even subjected to the scrutiny of a scientific body (The School of Technology at Munich) and certified as authentic before the last carping criticism was stilled. A fine world we live in, where a man's word is subordinated to the dictum of optical research!

Olympic gold medals for Everest and Nanga Parbat have yet to be alloted, and it will now be more difficult to prevent the Olympics from "gate-crashing" the realm of mountaineering than it was in 1936. For then a well-known member of the A. C. wrote in the *Alpine Journal*, at that time edited by none other than E. L. Strutt, that "Swiss and British climbers will have nothing to do with Olympic medals". But on the occasion of the ascent of Everest the press of the world, full of "summit ecstasy", trumpeted so loudly that a veritable shower of medals and decorations descended upon the completely unprepared climbers. Even a Gold Olympic Medal itself would not alter the fact that to-day, nearly 20 years after the neo-olympic pronouncement of the *Alpine Journal*, it is to be feared that in the climbers' heaven the worthy (and undecorated) Edward Whymper will be relegated to second place compared with the on-coming army of bemedalled and decorated "heroes" of mountaineering, now reduced to tests of endurance.

Such a statement may recall poignant memories of the good old days; but this would seem appropriate here, for in this book, written for explorers and

climbers, a fundamental principle was enunciated a year ago, that the removal of national rivalry from mountaineering and the recognition of the prowess of others would help to avert its threatened denigration. The slogan "peak-bagging" conceals many a fine effort in its murky obscurity. In this sense the conquest of Everest in all probability has ended an epoch. Lucien Devies coined the phrase «*Pour les alpinistes aussi, le temps du monde fini commence*». (The era of a world achieved has also begun for climbers.) Let us hope, therefore, that peace will return to the mountains, a peace where non-competitive climbing is undertaken solely for the enjoyment of its majesty and beauty, where a mountain is no longer scornfully classed as "an easy day for a lady", so that "fresh fields and pastures new" may remain undisturbed for explorers and climbers for many years to come.

India will have a big say in any future exploration of the Himalayas, as soon as her young men turn towards the hills. Thus, any assistance should be welcomed which aims at imparting sound mountaineering training to the indigeneous inhabitants of the Himalayas, awakening their Alpine consciousness and thus gradually producing a race of competent professional mountain guides. A start has already been made and the Swiss Foundation for Alpine Research is proud to have formed in Switzerland a first cadre of the Darjeeling Himalayan Mountaineering Institute.

This volume should not be put down without recalling that its last article, entitled "Himalayan Chronicle" by Marcel Kurz, stems from one written 20 years earlier. On returning from his splendid second Himalayan journey in 1932, Marcel Kurz began to put into practice his plan of writing a history of Himalayan exploration. The first part appeared in German in *Die Alpen* in 1933 and was later published in its original French version in *Alpinisme*, with the title "Le problème himalayen". Further parts followed in these periodicals, but that written in 1938 could not be published until 1940 and then only in its original French version in *Die Alpen*. After the war the history was continued; the chronicle covering the years 1939–46 appearing in *Berge der Welt* and *Montagnes du Monde* (first part in 1947, second part in German only, in 1950). A further series (1947–50) came out in German in *Berge der Welt* in 1952 and the present chronicle, 1951–2, which appears in this volume, is also published in *Montagnes du Monde* (in the French original), *Berge der Welt* and *Montagne del Mondo*.

O. G.

FORERUNNERS TO EVEREST

The Swiss Autumn Expedition 1952. Extracts from the Expedition's Journal[1]

By Gabriel Chevalley and Raymond Lambert

Gabriel Chevalley:

Certain Himalayans had for a long time considered the post-monsoon as very favourable. It would therefore be worth trying, if only to see what the conditions were really like. On the other hand, the results of the first expedition, which had surpassed all anticipations, quite naturally encouraged us to seize the opportunity that offered itself, since the authorisation for the autumn seemed certain.

I was myself entrusted with the leadership of the expedition. Lambert and I were the only two members of the first expedition who were able to start again. We were joined by a cinematographer, Norman G. Dyhrenfurth, and four climbers, Arthur Spöhel, Gustave Gross, Ernest Reiss and Jean Buzio, all of them with brilliant climbing careers.

We had scarcely more than a month in which to prepare the expedition, which was to be appreciably heavier than the first. Showing remarkable decision and speed, the Foundation got together to beat all records. It is fair to say that the second expedition benefited enormously by the preparations of the first and was, moreover, carried along to some extent by its momentum. Nevertheless, in each case it was a matter of decision and not of reflection or long meditation.

One of the reasons for our early hesitations had been the fear of cold. We knew that it would be more intense than in the spring, but our faith in our reindeer-skin boots and our clothing was so great that we went off without fear of frostbite.

The suppliers of our spring equipment got the new material together in less than a month. The twenty-five Sherpas were to have the same equipment as ourselves, and amongst the changes we made in the equipment were bigger and longer anoraks, boots that opened in front and not at the side, gaiters that enveloped the whole boot, lighter marching boots, and felt boots for all Sherpas and special porters as well as the climbers; but we did without the Fox receiver-transmitters and also the Closed-circuit oxygen apparatus, which had proved unsatisfactory, taking instead some 30,000 litres of oxygen in bottles of 400 and

[1] The full English version of this journal forms Part Two of *Forerunners to Everest*, by René Dittert, Gabriel Chevalley and Raymond Lambert: George Allen & Unwin Ltd., London, 1954.

600 litres. For provisions we used the spring lists adapted to longer duration and to a greater number of persons. On the other hand we envisaged a greater quantity of European foodstuffs for the Sherpas, who were fond of it at high altitudes. We also arranged for additional European foods for the approach march and a considerable quantity of fruit-juices.

The six tons of equipment were transported entirely by air from Zürich to Katmandu, and to this figure must be added a ton and a half of Indian provisions purchased at Katmandu.

As a comparison, the following figures may be given:

	1st Expedition tons (metric)	2nd Expedition tons (metric)
Equipment	5	7½
Coolies	163	251
Sherpas	14	23
Porters for the séracs	2	10

During the autumn expedition the number of porters between Namche and the Base Camp rose to 290.

(Hoping the monsoon would die down normally, the party set out from Katmandu on September 10th. But when arriving at Ringmo on the 21st the normal route via Taksindhu and Kharikola proved impossible for lack of a bridge over the swollen river. The party had to envisage the great crossing to Ghat through the mountains that overhang the right bank of the Dudh Kosi. – Editor.)

September 22nd:

The tents are sodden, mildewed and mud-soiled; the piled loads are among the bushes; it is a hard task to go and find one and remove all its carrying ropes in order to open it. We ourselves are wet, especially our boots, and in this sodden state we cannot even grease them. We are becoming morose.

Tensing tells me, as if excusing himself, that he cannot understand why the monsoon does not end quickly, though it is true that it was late in breaking.

September 23rd. Camp below the Pass at 13,450 ft.:

Events have taken a very unexpected course.

It was raining, even as it had done all night. Everyone started out as usual. I was not very well, suffering from neuritis and influenza. We dressed ourselves

warmly, left with the last of the troop and marched at the pace of the coolies so as not to get into a sweat, though we could not avoid this since the humidity of the air in the forest was very great. We gained height as we passed along a crest that was exposed to the wind, which swept the rain along. When we no longer had the protection of the forest, at close on 13,000 ft., in the wind and the wet, we began to feel the cold. Under a rock I saw a coolie who was trembling like a leaf, with his teeth chattering and his face contorted in agony. I went up to him. His limbs were icy cold, he had no pulse, his face was terrified and his lips blue, and his whole body trembled as if with an attack of malaria. Looking fixedly before him, begging for help but rooted to the spot, which was not even sheltered from the wind, he was unable to move. I passed him my wool shirt, my pullover and anorak. Spöhel gave him some trousers. We chafed him and stretched him out in a more sheltered spot. A little later the trembling died down and we were able to encourage him to resume the march without his load.

This coolie would quickly have died of the cold if he had stayed where he was. I did not then suspect that a little further on all the others had likewise stopped, crouching and trembling under their umbrellas. We had to shout at them and shake them to make them start again. Further on, before reaching the pass, they refused to go any further. I decided to send them all back. The next day we would hand over their pay to their leaders who would remain with us, and in order to continue we would summon porters from Namche. This bad weather may go on for some days, and the Katmandu porters will not be any better able to cross the pass. Reiss, who then came back from the pass, informed us that some coolies had gone up that far and were in distress in the fresh snow; two were dying. A party of Sherpas had crossed the pass and descended to Tanga. I again called out that the men should set off at once for Ringmo. Some porters returned from the pass dressed in jerseys taken from the loads! I was myself beginning to freeze, having no more on my back than a light shirt and a cape, and Lambert made me take shelter under a tent.

The two unfortunate coolies died; the icy rain and wind got the better of them.

October 31st, Camp V:

A reasonably good night, but very long, for we are obliged to go to bed early, since there is no sun after 2.30 p. m. and no large or spacious tent.

The whole party left at about 9 a. m. to continue the direct track to the rock island and the Eperon, to place the fixed rope and if possible to recover the older fixed rope. By putting a strong party into the line, the work would be speeded up.

I was never very enthusiastic about the immediate adoption of this tactic—the direct route to the Eperon by way of the main slope. It must be said that we

envisaged this and adopted it tactically at Zürich and that it was precisely for this route that such a great length of rope had been brought. Nevertheless, the primordial criterion determining the route to follow ought to be the possibility of an intermediate camp, and from the first a route by the Lhotse Glacier appeared to me very promising in this respect, as compared with the present one. I regret that my delay did not allow me to proceed, on the spot, to a searching and objective examination of the situation; I also regret having omitted or deferred opening a definite discussion of this subject on my first arrival at Camp IV. Later on, taking into consideration the establishment of Camp V below that of the spring, and in view of the argument for an ascent route effectively secured by stepcutting and a continuous fixed rope, with no real certainty of favourable conditions on the Lhotse Glacier, it was difficult for me to bring the operation to a halt, to reverse tactics and seek a new and unknown route. The fact is that, while in the spring the first day's reconnaissance got as far as the "depot" and that the necessary section of fixed rope was placed in a single day thereafter, two days progress has this time scarcely reached to two-thirds of the distance to the upper rock island which is still well below the "depot". There are several reasons for this: we start out from a camp some 500 to 600 ft. lower than previously; the base of the slope is sheer ice, and because of the condition of the snow, safety requires the cutting of steps and the fixing of a continuous rope from the bottom to the top of the slope.

The purpose of my ascent was therefore much more to ascertain the general aspect of this route than to work at pushing it forward; also, if possible to take a look at the Lhotse Glacier and its terraces at the closest range and to test the Draeger apparatus on the march.

Spöhel, roped to Dawa Thondup and Ang Temba, was already high on the slope. Two ropes of three Sherpas each were lower down. I myself was roped to Da Namgyal and Ang Nima and had arrived a few yards from the bergschrund, with the mask in position and the apparatus on my back. Someone behind me called out "Sahib!" and I understood that a fall of ice debris has occurred at that moment. We all bent forward. I was protected by the Draeger apparatus and came to no harm. Da Namgyal was a little bruised about the back.

When the ice stopped falling, we saw that the two intermediate ropes were motionless and that one Sherpa in a yellow anorak, Mingma Dorje, was hanging on the slope by his rope and held up by his companions. I hurried to his level and cut a few horizontal steps in order to reach him, for he was some six or eight yards to the left of the steps and the fixed rope. His face bleeding and his goggles broken, he had received the ice fragments full in the face; he whimpered and clung to the rope, without the strength to pull himself upright. Helped and pulled, he succeeded in placing his feet in the steps and I was able to get him

across again to the fixed rope. From there, slowly, with everybody helping, we led him to the lower lip of the bergschrund.

A number of us were at this point when the party comprising Aila, Da Norbu and Mingma Sitar, by we know not whose fault, slipped at top speed the whole length of the cone of hard and irregular snow and after a distance of 200 yards came to stop in a combe below.

The departure from the camp had been at 9 a. m. and the accident had occurred at 10 a. m. The block of ice which had been the cause had come from very high in the right-hand couloir, having broken away from the marginal séracs of the Lhotse Glacier.

The four injured men were laid on pneumatic mattresses and covered up. Mingma Dorje suffered from facial contusions and severe costal injuries; Mingma Sitar had a dislocation or fracture of the left clavicle, costal injuries and contusion of a thigh; Aila had facial injuries and costal bruising, and Da Norbu costal contusions.

I asked for additional medical supplies and received them at the beginning of the afternoon, so that I was able to give pantopon to the two most seriously injured, Mingma Dorje and Mingma Sitar, and coramin to Mingma Dorje, who was badly shocked and retless. Shortly afterwards, Mingma Dorje died. A very widespread subcutaneous emphysema made it possible to diagnose a serious perforation of the lung.

The accident was one of bad luck. Falls of debris and blocks of ice are very rare in this couloir. They come from the edge of the Lhotse Glacier to the right, and by aiming at the Eperon one is very soon in shelter on the left of their trajectory. The route itself has been made very safe by the steps that have been cut and by the fixed rope.

The other three injured men are clearly lost to the expedition and it is a pity, for we have none too many of these very good elements for the South Col.

November 1st

Lambert, Reiss, Buzio, Gross, Dyhrenfurth and Tensing came up early. They were anxious and very grieved. Tensing assured me that the Sherpas understood that the accident was one of bad luck. We busied ourselves at once with the burial of Mingma Dorje. His body was taken from the tent and wrapped in two jute sacks. Then the Sherpas carried him to the moraine at the foot of Everest, between Camps IV and V. It was a fine and warm day. The Sherpas dug a shallow grave and then above the remains they carefully built a tomb of stones. The last stones were of white granite. When it was complete, a wooden cross was planted at the foot of the tomb with the name of Mingma Dorje and the date, October 31st.

I gathered my comrades together (Lambert, Reiss, Spöhel and Tensing) and told them that the couloir route must not be used, and I found that this was now the general feeling. Passing to the matter of the accident, which had greatly weakened the porters, both physically and morally, I said that we had to consider the general chances of the expedition and not stake the fate of the entire expedition blindly upon a single throw, that of the direct route by way of the couloir and Eperon. I said that this route, although direct and used with success in the spring, would probably end in failure. For, amongst other reasons, but primarily, it would be impossible, if the problem be considered realistically, to pitch an intermediate camp. But even if the conditions were those of the spring (they are actually much more unfavourable, with ice below and snow on the Eperon itself), it cannot be covered in a single stage because the days are much shorter. So we must now try our luck elsewhere, on the Lhotse Glacier. I do not know if it will be very difficult or not, nor whether it will be dangerous or not; but we may very reasonably presume that one—or even two—sites for a camp can be found there.

(This day the weather broke and a fierce gale, ceaseless during all November, wore the party out. In spite of these wintry conditions the South Col was eventually reached on November 19th. – Editor.)

Raymond Lambert:
November 19th: Camp VIII on South Col:

Nothing to eat; too difficult to boil water. The other foods were too frozen. Reiss and I are in the same tent, with a mattress for two and a wadded sleeping-bag each. Tensing, good as ever, brought us chocolate and an infernal night then began. It is impossible to sleep; the wind shakes the tent, there are 72 degrees of frost (F.) and we are all trying not to freeze. We notice that the strength of the wind increases continually and hope that at sunrise tomorrow it will drop. The hours slip by slowly. I have lit two candles to warm my hands; we talk and wait for day to break. It is a terrible struggle. We call upon our final strength so that tomorrow we may establish Camp IX.

November 20th:

Day broke, but the gale went on. To crown all, the sun did not appear. It passed too low behind Lhotse, and reached us only at about 10 a. m. Tensing came to see us in the tent and we talked. We would be able to start in half an hour, but one Sherpa (Goundin) was sick. We waited for tea and that was all. Eventually we came out of our tents, prepared our sacks and at 11.30 set off in the direction of the south-east ridge to establish Camp IX. But the gale and the

cold paralysed us gradually. We painfully crossed the Col and ascended the glacier facing the camp. Flattened by the wind against a wall of snow were the remains of an eagle.

Progress was slow. We felt our noses and the ends of our fingers freezing. We were pierced by the cold despite all our equipment. Tensing was ill in his turn, the Sherpas almost ceased to advance and we halted at about 26,600 ft. It was impossible to go on in such conditions and at such a height.

Gabriel Chevalley :

At the end of the afternoon I was in the tent (Camp VII) and heard steps. This time the sound was more precise than that imitation of footsteps made by the wind when it shifts things on the snow. It was not the Sherpas, but Lambert, Reiss and Tensing! The Sherpas arrived later.

I was not surprised; the cold and the wind have made the South Col untenable. But it was only slowly that I realised the whole significance of their return. More precisely, one thing is perfectly clear from the start: it is simply in order to escape death that these ten men have to-day returned from the South Col, after having started in the direction of the ridge in order to pitch Camp IX. But the other meaning—the failure of our attempt to ascend Everest—is hard to accept. For a long while I contented myself with believing that we were simply going to begin again a little later; for at the South Col are tents, provisions and sufficient oxygen for a serious attempt, and three inhalers, the principles and mechanism of which seem this time to have solved the physiological problem of Everest. And there is, moreover, the reassuring argument that we can afford to wait because we are not threatened by the monsoon.

My mind seized upon each of these arguments so as to plan a reply to the failure. I looked for mistakes, in general or in detail, that we may have made. But is a mistake really a mistake when one can only judge it a posteriori? Could we have been more lightly equipped? No, volume is in proportion to number, and the number is essential in order to obtain the necessary kernel of qualified porters for the South Col. The wind slowed down the establishment of Camps IV and V, and a week was certainly lost in the couloir, but if it were not so, the earliest moment for the assault would have fallen at the very height of the gale.

All this passed through my head during the night. Neither Lambert nor I could sleep much because of the cold which pierced us, although we wore the maximum of clothing in our double sleeping bags on a well-inflated mattress and in a well-closed "iso-thermic" tent.

I exchanged a few words with him just to learn the broad outline of the last few days. The leading party, comprising Lambert, Reiss, Tensing and seven

Sherpas, had arrived on the South Col in the afternoon of the 19th, harassed and jostled by the wind, and great difficulty had been experienced in erecting the tents. After a very hard night, they had set off to pitch Camp IX on the south-east ridge; but it soon became necessary to accept the evidence—it was impossible to live in such wind and cold. Lambert was unequivocal.

Who will go up again? Not the Sherpas, not himself, nor Reiss, nor Tensing... Can anyone do so later, after recovering and resting? For that he will have to go down to Camp I; neither V nor IV nor III, all in the shadow and the wind and cold, will provide the conditions. Can one deceive oneself any longer about the climate of the South Col and Everest during the coming weeks? The cold, which has increased so much since October and which has clearly become even more intense in the last few days, will increase further: and the wind at the South Col is at least semi-constant, if not permanent. At this very moment it can be heard roaring with all its strength upon Everest.

Thus, as in the spring, but more definitely so, this is the sudden and extremely rapid denouement. The retreat is not a planned one; it is forced, at once and completely. We are purged from Everest.

EVEREST PORTFOLIO
BY THE INDIAN AIR FORCE

By courtesy of the Government of India

The era of primitive air photography, when photos were taken through Plexiglass cockpits or fleetingly between the support wires and struts of ancient biplanes, is over. A recently overhauled fourengined Liberator transport plane arrived in Delhi in May 1953 and the Indian Air Force at once decided to fly over Everest from an air strip in Bihar. A considerable advance in technique has taken place since the first flight over the mountain in a single-engined crate, over 20 years ago!

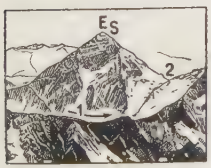
The following took part in the Everest flight: Flight-Lieutenant A. E. Paul (flight commander); Flying Officer S. C. Aurora (second pilot); Flying Officer R. K. Dhagat (navigator); Sergeants A. K. Sarker (engineer) and A. E. Lakra (radio). The photographers were: Flight Lieutenants B. M. Kothari and R. N. Banerjee; film camera operators: Squadron-Leader S. Mullick and Flight-Lieutenant N. D. Jayal.

The machine took off out of the mists of the Ganges plain at 8.00 hrs. on Saturday 6th June 1953 and at 14,500 ft. electrically-heated flying suits were donned and the oxygen was switched on. At 32,000 ft. the camera ports were opened and the cameras got into position.

Circling the flanks: The varied orientation of the first series of pictures (plates 1, 2 and 3/4) permit a good comparison of the different routes on Everest.

Plate 1: Flying in over the frontier ridge between the West Rongbuk Glacier (Tibet) and the Chakri Glacier (Nepal) on a south-easterly course, high above Pumori (P), with a view of the pre-war route that runs up the North Ridge from the North Col, to the right of Changtse ("North Peak"—C), on the Tibetan north-west face of Everest (E). The post-war route leads through the Khumbu Ice-fall (2) at the foot of the West Shoulder (1), entirely on Nepalese territory.

Plate 2: Flying east over the watershed between the Khumbu and Chukhung Glaciers. View of the "Horseshoe" formed by Everest (E), Lhotse (L) and Nuptse (below the arrow), which gives access over the Khumbu Glacier to the South Col, the key point of the ascent.



Double-plate 3/4: Turning in above the Chukhung Peak, the high ridge of Nuptse (in foreground) is crossed. Behind that lies the Western Cwm (1) at the foot of the 3000 m. (10,000 ft.) high south-west face of Everest, leading up to the South Col (2). Above the latter the South Ridge ascends over the South Peaks to the summit (E).

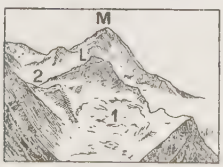
Flight over the summit. These pictures enable a comparison to be made between the western aspect (plate 5) and the birds-eye views (plates 6 and 7) and clarify the configuration of the summit area, until now only seen in somewhat tilted photos taken from ground level. This series of pictures is devoted especially to the topography of the summit ridge between the South Peak and the summit.

Plate 5 : Flying over the Western Cwm at a little over 9000 m. (29,500 ft.), with view of the terminal arête of the mountain. Three ridges radiate from the summit of Everest (E) ; the North Ridge to the left, the West Ridge diagonally from right to left, and the South Ridge to the right, running up to the South Peak (S), forming the top edge of the south-west wall and finishing as a rib between the south-west wall and south face.

Plate 6 : Immediately below the summit pyramid. The topography of the ridge between the South Peak (S) and the summit (E) is clearly delineated. Compare with view from ground level shown in plate 14. The rock cap of the summit pyramid lies at the level of the horizontal niches on the beds of a series of softer stratified rocks of the Tibetan nappes.

Plate 7 : The actual moment of flight above the summit, with a downwards view upon the South Peak (S) and the summit itself (E). The strata of the North Ridge, so inimical to climbers, is well marked. The slabby steps of the upper part of the Tibetan north-west face are clearly recognisable, their structure being like the tiles on the roof of a house. On the other hand the strata of the south-west wall and south face are more favourably inclined. Higher up the rock cap of the summit pyramid rises in steps up to the peak where all the ridges unite. These vertical rises on the North Ridge form the well-known First and Second Steps.

Flight over the Lhotse face. This series of pictures (plates 8/9 and 10) are shown as a consolation prize for those who feared that the conquest of Everest had derated its mighty neighbours, the two 8000 m. peaks of Lhotse and Makalu. Great problems for mountain exploration here await the hardy mountaineer !



Double-plate 8/9 : Air view down on to Lhotse (L) and Makalu (M). The Lhotse Glacier descends the Lhotse Face towards the Western Cwm, looking geologically like a subsidence. To the left can be seen the Geneva Spur (Eperon des Genevois) forming the more direct access to the South Col (2). The traverse of the 1000 m. (3280 ft.) Lhotse Face was in keeping with the classical principle of choosing a route up a glacier with its possibilities of systematic subdivision (i. e. intermediate camps) in contrast to the more direct route up the Geneva Spur.

Plate 10 : View of Lhotse (L) from the air, with Lhotse II, 100 m. (330 ft.) lower, in echelon to the right, the Lhotse Glacier (1) and South Col (2). In this picture the Lhotse Face is clearly seen to form the rear wall at the head of the Cwm.

EVEREST ASCENDED

By Sir John Hunt

On the day when the news was announced in London that Tensing and Hillary had climbed Everest, there were many people throughout the world who interpreted the triumph as an exclusively British achievement. Some there were, in fact, who focussed attention on those two men who reached the top and a few, mistaking utterly the whole spirit of the enterprise, sought to establish which of these two had first arrived up there, in order to acclaim him alone the victor. But broader visions prevailed and the deed was soon recognized as the work of an exceptionally united team.

To us, as we prepared our Expedition and later, as we discussed our wonderful fortune at Camp IV on 30th May, the event seemed to have grown up from a far broader base. We thought of all those others who had come there before us and all that they had contributed to our success by their many valiant assaults upon the ramparts protecting the utmost point of the earth. We spoke of our own men who, from 1921 until 1938, had returned again and again, suffering many a set-back and not a few casualties yet never accepting defeat. How near they got, even in those early years when equipment was rudimentary, on those northern slopes, so utterly exposed to the vehemence of the prevailing gale! We thought of those who first probed at the defences on the southern side, viewed as long ago as 1921, but then inaccessible and deemed impracticable. Again we paid tribute to our own climbers, contemporaries whom we knew as friends, of whom one, Hillary, was with us now. They had breached the outer defences, the Icefall, which had repelled the eye even of so ardent a spirit as Mallory.

And then we turned our thoughts to our Swiss friends. They had followed close on Shipton's successful reconnaissance and they had carried the assault to the final keep of the fortress—a remarkable feat this, on their first acquaintance with the mountain and, for most of them, their first experience of the Himalaya. We had seen the evidence of their attempts at almost every step—flags flaunting a familiar trademark, stuck in the most unlikely positions, upon pinnacles of ice or inside great chasms, beckoning us to follow a way which was utterly impraticable now: dumps of food and ragged tent walls in the Western Cwm: more tent cloth crushed beneath the ice on ledges of the Lhotse Face and, buried nearby, precious

bottles of oxygen: the unforgettable pathos of their Camp VIII on the South Col, with the tent struts still standing, skeletons of former shelters, food tins, oxygen frames, a bleached climbing rope. And there was that ultimate tent, at 27,200 ft. on the S.E. ridge, another empty framework testifying to the unforgettable night spent by Lambert and Tensing without sleeping bags one year before; it was a spectacle which haunts my memory.

We realized all along how close we were to our Swiss friends, from the day—it was 25th January, 1953—when Evans and I visited Zürich to hear the experiences of the autumn expedition, freshly back from the first attempt to scale the peak in winter. We believe that they, in their turn, recognized how much they owed to Shipton's experience in 1951, and indeed to the sum of our knowledge, stored-up through the years.

As I look back in lengthening perspective upon the story of Everest's first ascent in 1953, I see more and more clearly what a significant event it was, and will continue to be, in the history of human achievement. For it was an achievement not only of two climbers, nor of our expedition, nor even of the combined strength of all eleven expeditions in thirty-two years' of endeavour. It was brought about also by the Sherpas who served these expeditions, faithful, tough and cheerful little men who carried the loads to great heights, increasing their mountaineering skill to the point where one of them had fully earned a place in the climbing party; after partnering Lambert in 1952, when they reached a point only about 1000 ft. from the top, Tensing reached the summit with Hillary in 1953, thus symbolizing the part played by his countrymen in the long-standing struggle.

And it was an achievement of an even wider circle—all those many who laboured to produce equipment, food and stores; and others who assisted with money and in the administrative arrangements. I believe too, that the ascent of Everest was influenced to an incalculable degree by thousands of folk the world over who, though they never left their homes, were with each attempt in spirit, hoping and praying and waiting for the outcome.

In conclusion, I am tempted to seek a moral in this story. If the patient, persistent efforts of a few men, striving in unity to attain such a goal as Everest, fortified in the attainment of their ideal by many others, can result in victory, can we not equally apply this power to solving other problems, less lofty but more pressing, in this sorely troubled world?

EVEREST 1953

By Wilfrid Noyce

I do not intend to keep the reader lingering long in the plains and foothills. Nor have I space to describe the earlier ten expeditions to the mountain, eight British and two Swiss, though these formed with us the greater team which climbed Everest. But a word must be said briefly about preparations, and the arrival of the British Everest party at Katmandu.

The work of organising the British Mount Everest Expedition of 1953 was conducted at high speed. Anybody who has run a Himalayan expedition on whatever scale will appreciate the problem facing John Hunt when he ordered his equipment on December 10th in the consciousness that it must be ready packed to sail on February 12th. The main work of organisation fell upon the leader and upon Charles Wylie, who had been organising secretary to the Expedition since September. But all the members had their own departments. George Band, a geological student, was in charge of wireless and meteorology; he also helped Griffith Pugh with the food. Tom Bourdillon, a research scientist, was in charge of oxygen in the field, Charles Evans, a brain surgeon, looked after our very large side of the packing and the stores on the mountain. A considerable inventory of these was compiled for us by Stuart Bain of Lusk's, for we departed with 7½ tons of stores in some 500 diversely shaped packages. Edmund Hillary and George Lowe were precluded by being New Zealanders from taking active parts in the preparations. But on the mountain Hillary took charge of several cookers designed by C. R. Cooke; Lowe had a great part in the filming with Tom Stobart, and took many of the shots. Gregory, a travel agent, looked after our travel arrangements, also the still photography and postal department. I was officially in charge of climbing equipment, I helped Evans with the stores and also, on the strength of a three day course in London, I was boot repairer to the party. Michael Ward was our doctor, but he was also a climber. Michael Westmacott, who had been a sapper, had as his department the bridging and structural apparatus, also the tents. Charles Wylie, secretary of the Expedition before we left, then became its transport officer. Being an officer of the Gurkhas, he spoke fluent Nepali. Several other members of the party spoke adequate Hindi, which most of the Sherpas understood.

Besides these climbers we had Tom Stobart as ciné-camera man to take the films, and Griffith Pugh, a research physiologist who had had practical experience in mountain equipment from the war. His help in ordering wind-proof clothing and other items was invaluable.

The hectic months of preparation culminated in the departure of the main party with the baggage in the *S.S. Stratheden* from Tilbury on February 12th. John Hunt was unable to accompany this party himself owing to a minor operation for sinus. He therefore flew out with Bourdillon later. Evans and Gregory flew out as advanced party, while Hillary joined up at Katmandu by air. George Lowe joined the main party at Bombay and for some of us there ensued a tiresome journey across India. The baggage had to be trans-shipped three times on to railways of three different gauges before it arrived at the rail head of Amlekganj, twenty-five miles inside the frontier of Nepal. Each trans-shipment needed to be carefully supervised; we were fortunate indeed to lose nothing. Finally from Bimphedi we were generously helped in the task of loading on to the rope railway by the officers of the Indian engineering unit under Colonel Grant. This rope railway is likely to become obsolete in a year's time, when the road now being constructed by the Indian Army is finished. But at present it is the only means of entry for luggage except by air. Michael Westmacott and I stayed to see the stores swing up from the terminal warehouse to the darkness above. Loading started at 1 a. m. on March 8th and finished at 6 o'clock. We then set out to follow with an eighteen-mile walk on foot. This crosses two 6000-ft. ridges and descends into the steep valley between. It was a delightful walk. Almond blossom showed pink against the brown mud-houses. As we descended into the first valley we could see our stores being swung across the sky perhaps 2000 ft. above our heads. I remember thinking that one crate of high-altitude boots nicely dropped might well wreck the whole expedition.

Occasionally along the very rough track one could see parties of thirty coolies bearing the body of a motor-car. A few days ago a bull-dozer had managed to make its way across, a feat most remarkable in view of the rough steepness of the climb to the second ridge. From the crest of this ridge you look across the valley of Nepal, over Tankot lying at your feet and some six miles out from Katmandu.

The Approach

On March 8th the whole party was assembled for the first time under the roof of the British Embassy. Meanwhile Tensing had brought up Sherpas from Darjeeling, others had come to join the party from Namche Bazar, home of the Sherpas. In all we would need twenty or more for the highest carries; while fourteen were being enlisted locally at Namche Bazar by Anullu. These would carry on the icefall only.

The 9th March was a busy day at Badgaon, six miles from Katmandu, where the Nepalese Army had put the parade ground at our disposal. Here the Sherpas were assisting the sahibs, all of whom were sorting stores. Tensing himself we knew well from his previous reputation, particularly his feats with the historic Swiss attempts of the previous year. He was reported to be unwell; but a first sight of the flashing smile was enough to convince the most gloomy that he was as enthusiastic as ever. Other outstanding Sherpas were the brothers, Anullu and Da Tensing, both of whom had greatly impressed the Cho Oyu party the previous year. Then there was Da Namgyal, with his thin face and shy smile. He had greatly distinguished himself before on Everest. Pasang Phutar II was large and gay and a fine climber. Ang Temba was a small tough gorilla and Pemba large and helpful. Two of the youngest acquitted themselves excellently; Gompu at seventeen and Ang Tseri at sixteen both reached the South Col. Three of the best Sherpas, Ang Nyima, Dawa Thondup and Ang Norbu we were to meet only later.

These men would not carry, or only light loads, on the march. They were reserved for work on the mountain. For the march we had an impressive array of coolies hired locally. We would need something like the appalling figure of 350 for our very complicated stores, which included some oxygen. The main body of the oxygen, not ready in time to come with us, would be flown out later and brought up by Major J. O. M. Roberts of the Gurkhas. The coolies were already assembled at Badgaon on the 9th. A number of them were Sherpa women, or Sherpanis, come down to accompany their husbands or sweethearts. They were attractively dressed in the Sherpani apron of many colours. It must be said at once that they carried as much as the men, often more, were never drunk and never quarrelsome. We sometimes wondered whether it would not be possible to staff a whole expedition with Sherpanis.

In order to split this army of carriers, John Hunt decided to move in two parties, one a day behind the other. The first party with 150 coolies would consist of the bulk of the climbers and Sherpas. The second party was to be led by Charles Wylie, accompanied by Ward and Pugh. These would have with them 200 coolies and five Gurkha N. C. O.s. When it is added that a further 5000 lb. of oxygen was to be brought by Roberts in April, it will be seen that the expedition must have provided work for a fair percentage of the East Nepal population.

The first caravan moved off at 11 a.m. on the morning of March 10th. John Hunt stayed behind with the second party and double-marched the second day. Amid many good wishes and some clicking of cameras from the journalists the great army streamed off through the town of Badgaon, itself a fine monument to the elegant civilisation of the Newars. That afternoon we reached Banepa, six

miles further on, and got out some of the tents for the first time since the departure from England.

Here Tensing pointed out on a map the stages of the march used by the Swiss a year earlier. We would follow approximately the same stages, taking seventeen days to Thyangboche: first due east, cutting across the grain of the country and over the rivers which flow south; then striking north at the Dudh Kosi, the river which drains the glaciers of Everest, Gyachung Kang and Cho Oyu. We would reach Namche Bazar on March 25th. These stages were not long, but the coolies carrying 60 lb. could not manage more; which was a very excellent excuse for the climbers not to manage more either. The stopping places would, whenever possible, be near enough to a village for the coolies to be able to shelter in the houses, but not too near, since we feared the many diseases which are the danger of this southern approach.

Apart from the danger of disease, this march has every advantage over the approach through Tibet used by the expeditions of the twenties and thirties. Instead of the temperatures below zero, the bitter wind bearing dust that racked the climbers with coughs and made them speechless from sore throats, we slept out at night and bathed in the rivers before breakfast. This was one reason why we all arrived fit at Base, and why the health of the party in general remained excellent. It was part of the plan that we should get fit slowly, speeding up during the acclimatisation period which would take place at the end of March and the beginning of April.

Thus the party moved to a definite and leisurely routine. We set off at 6 a. m. on tea and biscuit. Michael Westmacott, speaking Urdu and being mathematically minded, was in charge of the first party's coolies and joined Hakoman Singh, their commander, in getting the sluggards under way and rebuking those who had had too much "chang", or native beer, the night before. We then walked rather haphazardly for two or three hours, the cinematographer and photographic experts usually being towards the rear. If we were lucky, this landed us by a river or stream in which to bathe, while Thondup, our Sherpa cook, prepared a substantial breakfast of porridge, bacon and egg, biscuits or chapattis. Thondup was a tall straight Sherpa, distinguished by a smile revealing golden teeth and remarkable organising ability. He appeared in a green cotton nylon shirt with trousers to match, which some who had been on Cho Oyu last year recognised as one of the missing sleeping-bag covers. But he was a good cook and a very attentive caterer.

After the breakfast halt, which took two hours and during which the coolies ambled in and cooked their own food, we set out again for the hotter part of the march. As we were committed to oxygen, it was thought a good plan to accustom ourselves to the masks by wearing them for a period each day. The most virtuous

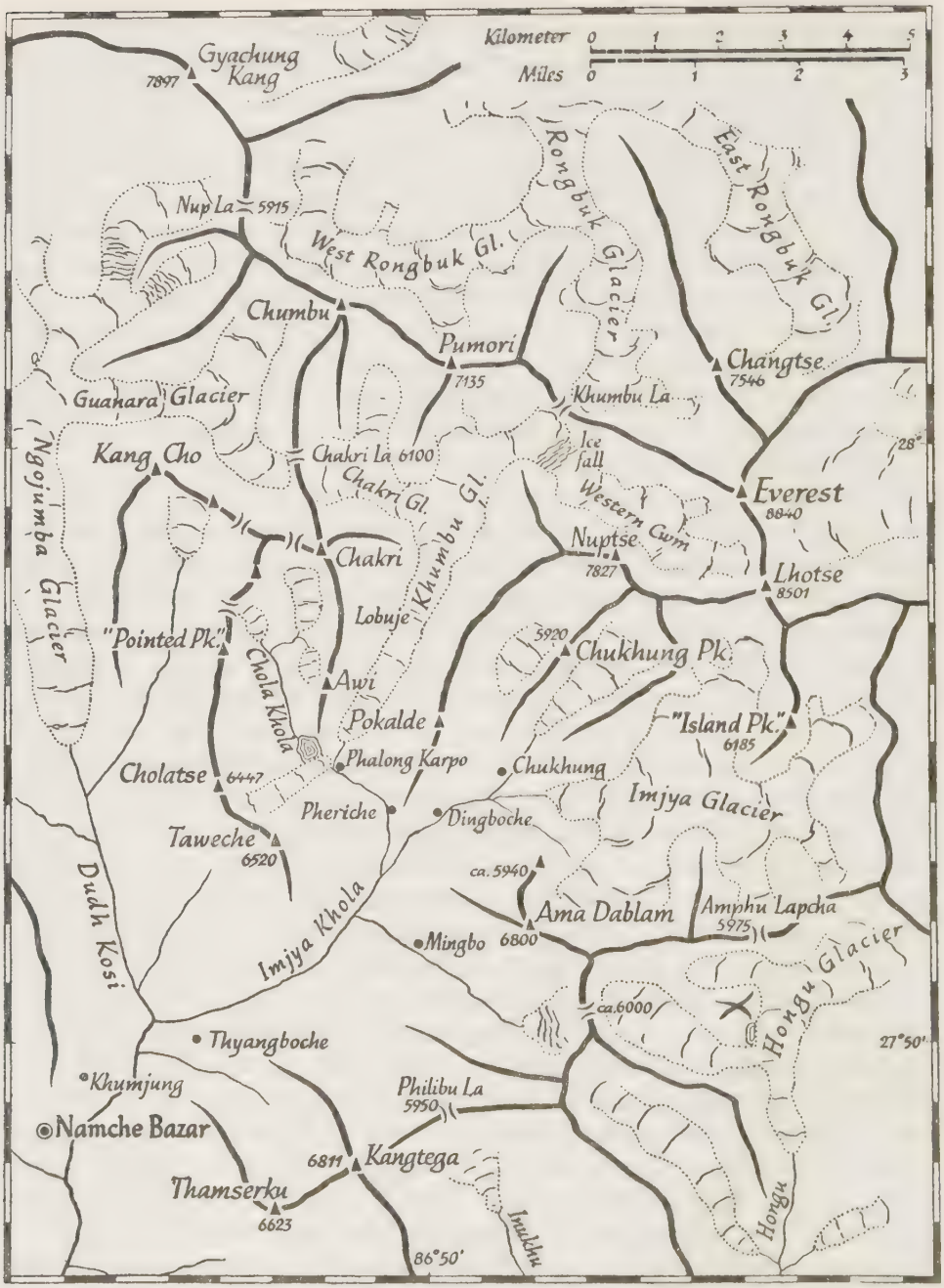
donned theirs after breakfast and steamed up the next hot slope upon the route, to arrive at the top perspiring and vowing that it had not been as bad as last time. We usually reached camp in the early afternoon; after tea, those who so wished could adopt the recumbent position upon lilos which became so common that we always knew it as the "Everest position". Or it was possible to pursue a hobby, such as chasing butterflies with Hunt and Westmacott. The latter trapped forty different species. George Band, meanwhile, pursued beetles, while Westmacott's more thankless task it was to round up the coolie loads that were by now dribbling in. At 6.30 supper, talk over the coffee, then out to sleep under the stars.

Our suppers and breakfasts upon the march were based on British Army tinned "Compo" ration, giving one main meat meal a day. Only local produce that could be cooked was allowed, chiefly potatoes, rice and eggs. We certainly ate very well, without the risks inherent (though to be accepted on smaller expeditions) in local food.

A walk from Banepa took us to Dolalghat at only 2500 ft. on the broad Sun Kosi River. All the heig hts are very approximate, beingtaken from our altimeter. The next day's long climb to Chyaubas (6500 ft.) brought a breath of fresh air. Thence along the ridges to Risingo (5500 ft.) where we camped in the compound of the small temple. Here a heavy hailstorm followed by torrential rain hit the first party, while the second party received it on the more exposed slope of Chyaubas. This was the one night upon which it was impossible to sleep out.

We descended next day to a tributary river and climbed by a long wooded valley-bed to the ridge of Manga Deorali (7700 ft.). From this the astounding battlements of the Gauri Sankar range, particularly Menlungtse (*c.* 24,000 ft.) confronted us, looking very close. We dropped 4000 ft., then climbed to Kirantechap (4400 ft.). That afternoon, March 15th, I lay with John Hunt on the headland overlooking the Bhota Kosi working out the first dispatch to be sent home. Gregory, in charge of mail, was arranging a cycle of runners who would depart with our mail for Katmandu and return bearing mail due to us. An average time to our Base Camp on Everest was nine days. The fastest achieved ever, in expectation of large reward, was six days. Hence to Iarsa, 6100 ft., set in a wide bowl of hills; from the ridge beyond it next day (8400 ft.) we had the first glimpse, as we thought, of Everest's top peering over intervening ridges. We dropped to Those, 6100 ft., where iron is mined and forged into chains and rods for the bridges around. Those was on the Kimti Kola, a tributary of the Bhota Kosi, and from its valley we must climb to the Chyangma La (9500 ft.) and down to Chyangma (6900 ft.). This was the first village in Sherpa country.

From Chyangma we could see the Lamjura Banjang pass, 12,000 ft., to the west, but before reaching it we must spend the night at Seta (8000 ft.). The pass


Kilometer 0 1 2 3 4 5
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Gyachung Kang
7897
Nup La 5915
West Rongbuk Gl.
Rongbuk Glacier
East Rongbuk Gl.
Chumbu
Pumori
7135
Changtse
7546
Guahara Glacier
Khumbu La
Ice fall
Kang Cho
Chakri La 6100
Chakri Gl.
Khumbu Gl.
Western Cwm
Everest
8840
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Ngojumba Glacier
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Nuptse
7827
Lhotse
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Lobuje
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Chola Khola
5920
Chukhung Pk.
Awi
Pokalde
"Island Pk."
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Phalong Karpo
Chukhung
Cholatse 6447
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Pheriche
Dingboche
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Ama Dablam
Amphu Lapcha
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Dudh Kosi
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Thyangboche
Khumjung
Philibu La
5950
Namche Bazar
6811
Kangtega
Thamserku
6623
Inukhu
Hongu
86°50'

took us over to the charming village of Junbesi (8800 ft.) where kukris are made, and next day to Taksind Lu (9600 ft.) on the next ridge. From here we dropped to the Dudh Kosi, and the last three marches to Namche were alongside the bed of this river: at that time of the year the stream was remarkably small, considering the area it drains. When we returned in June it was swollen and there was no bridge. We had to take an alternative route over the high ridges bounding its right bank.

We did not on the outward march visit the village of Namche for fear of disease, but camped on a saddle above. On the 26th March the first party descended to the Dudh Kosi and climbed along a diagonal path up to the ridge opposite, to the Monastery of Thyangboche between 12,000 and 13,000 ft. high. In the grass meadows beyond the monastery, surrounded by woods of juniper, silver birch and pine, we pitched our first Base Camp next day. The second party arrived, their coolies were paid off, loads were unpacked and clothes fitted both for ourselves and for Sherpas. To deal with the crampons or ice-claws, some of which did not fit well, we called for the services of the blacksmith at Namche, who came up for the purpose. In intervals of unpacking and preparation we were hospitably received at the monastery—with tea and stories of the Abominable Snowman. It appears that this mysterious gentleman is seen around these woods in winter, and the deputy Abbot vividly described and even imitated his motions.

After two days here the party was ready for the next step in the programme, the three weeks which we called the acclimatisation period.

The Acclimatisation Period

We were too early for Everest. The winter wind raged upon the mountain, driving great swirls and clouds of snow across the immense side of the Lhotse-Nuptse wall. But our early arrival was of design. With many climbers, Sherpas included, there is a belt of mountain sickness which must be endured often as low as from 15,000 to 17,000 ft. At these heights headaches, vomiting, loss of appetite and the rest can be tiresome at first. But once the body is acclimatised and the blood thickened it is possible to move at almost Alpine speed even above 20,000 ft. We hoped, by spending some three weeks in the mountains and valleys to the south and west of Everest, that we would arrive at Base Camp thoroughly fit and ready for the main job. Moreover, both we and the Sherpas would have practised oxygen and would have had opportunity to get to know one another. We would even have sampled the special high-altitude rations intended for the higher stretches of Everest.

The days at Thyangboche were therefore extremely busy. We were splitting up into groups of four climbers each with six Sherpas, and coolies for the first two days. Rations must therefore be given out to each party, and all climbers and

Sherpas issued with goggles, ice-axes, glacier cream and other needs besides their clothing and boots.

The meadow was gay with yellow, orange and red tents. Meanwhile the oxygen was unpacked by Bourdillon, who made here a serious discovery. Some of our cylinders were leaking. If those to be brought by Roberts leaked too the whole programme must be drastically altered. A runner was sent to Namche, where there is now an Indian wireless post; Roberts, receiving the telegram as he started, conscientiously opened every box and made sure that all was well.

The first party, Evans, Band, Westmacott and Bourdillon, set out early on the 29th. We were dividing this time into two parts, intending all to meet again at Thyangboche on the 6th April, to regroup and then go out again. Evans and Bourdillon were the two experts of the Closed-Circuit apparatus and intended to try it out for the first time on the heights just south of Ama Dablam, 22,310 ft., whose astonishing wedge dominated our camp to the north-east. The Closed-Circuit apparatus was experimental and its protagonist was Bourdillon. Very briefly, the Open-Circuit is similar to that used previously on Everest. In this the climber breathes in air and oxygen, and what he breathes out passes through an outlet valve and is lost. With the Closed-Circuit the air breathed out is passed through a cannister containing soda lime and reconverted to be breathed in again. If all goes well the climber's performance should be much better than on the Open-Circuit, since he is breathing purer oxygen. But the set is inevitably heavier and more delicate, and at this stage it was not known how it would work at high altitudes.

Evans' party had set off to look for what seemed from the map to be a hidden valley immediately south of Ama Dablam. They found this not to exist, but instead, from a plateau at 17,000 ft. on a spur running south from the mountain, they observed the three cols leading over from the Kangtega-Ama Dablam watershed into the Hongu Basin. Of these the most northerly had been crossed in 1951 by Shipton and Hillary. They decided to try the southernmost, which they named the Mera La, after the village below. They spent some time on the south-west spur of Ama Dablam testing oxygen, and Bourdillon climbed a 19,000-ft. rock peak. On April 2nd Evans, Band and Westmacott reached the Mera La over a short steep ice slope. They reckoned the height to be 19,500 ft. and from this viewpoint they could see down into the Hongu, which from here would be easily accessible, and across to Makalu (27,790 ft.). On this party Evans, equipped with a theodolite, collected data for a map which he continued when he stayed behind in June.

Hunt's party, consisting of Lowe, Gregory and Tensing, with Sherpas, started on the 30th, explored the area of Chukhung and the jumble of minor peaks immediately south of the great wall of Nuptse. They found to their great

satisfaction that wearing oxygen at 19,000 ft. they could move at a rate of nearly 2000 ft. an hour. Their most interesting climb was up the northern ice ridge of Chukhung Peak, an attractive mountain of 19,400 ft. with a view straight across to the stupendous white granite of Nuptse's precipices.

One thing noticed by this party, as by all the others, was that as they acclimatised the climbers acquired a tremendous appetite. We had with us for trial two days' worth per man (Sherpas included) of our special ration for use high on the mountain. This consisted of 14 oz. of sugar, some grapenuts, pemmican soup, powder milk, cheese, chocolate or fruit bar, tea, coffee or cocoa, boiled sweets; all specially vacuum-packed. This ration at the lower levels of 19,000 to 20,000 ft. seemed very inadequate.

Of the third party, Ed. Hillary was suffering from a sore throat and followed Wylie, Ward and myself two days after we set out on the 30th. We made our way up the Chola Kola, an unexplored valley branching north from Phalong Karpo, which was on the route to Everest. At its head is a cirque of peaks. We climbed Pointed Peak, 19,200 ft., and found the col reached from the other side by Bourdillon and Ward in 1951. Joined by Hillary we camped on the col beside Pointed Peak and crossed into the next valley, the untrodden Chugima, to climb Kangcho 20,300 ft., a fine ice peak at the head of the valley whose northern flank drops to the Guanara Glacier. Kangcho we climbed by the ice ridge from the col connecting it with another and formidable customer to the right. It provided interesting ice work on a curious honeycomb formation which in places allowed quite steep ice to be climbed without too much step-cutting. Two of the Sherpas came to the summit. Later in the year Evans, who stayed behind, climbed both Pointed Peak and Kangcho and admired the most impressive view of Everest from the west which they give. We returned down the Chugima Valley and reached Thyangboche on April 6th, having circumvented those two impressive peaks Taweche, 22,130 ft., and its neighbour, which the locals call Arkanse, 21,150 ft. All the parties had been fortunate, for it is most difficult in this area to find any climbable peaks at all. The satellites of Everest rise in walls of awe-inspiring verticality which make the names Kangtega, Ama Dablam, Arkanje, synonymous for utter inaccessibility. To their soaring cliffs only the tough Himalayan ice can cling.

The second stay at Thyangboche was for most a very busy time. One party, Evans, Gregory, Wylie and Tensing, would return to Thyangboche from the second period in order to bring on both the oxygen consignment brought up by Roberts and the low-altitude Sherpas who would work only in the icefall. Hunt's party, Bourdillon, Ward and myself, would be exploring in the Imja Basin, then crossing over by a pass above Chukhung in order to join the third party and take

over work on the icefall from them. For this third party, consisting of Hillary, Lowe, Band and Westmacott, would have the task of making the first inroad into the icefall of Everest. If possible by April 17th, they would have found a way up and we would be able to set about making it safe and getting up the loads.

There was much therefore to do. Except Evans' party nobody would return to Thyangboche, so that we must make a final sorting of stores. All had their jobs. Evans marked stores, Band distributed rations, Bourdillon oxygen, Westmacott got out and tested the duralumin bridge. My most urgent tasks were the repair and fitting of crampons, several of which had broken, the repair of boots which had split at the toes, and the allocation of Sherpa food needed for now and the mountain. Hunt himself was exceptionnally busy ordering the future programme and also our monies. These were a constant worry, since we had set out with twelve coolie loads of bullion. Moreover money seemed to expend itself at an alarming rate which caused him ceaseless anxiety.

On April 9th all the parties set out, Hillary's party having besides Stobart, Pugh and the Sherpas, thirty-nine coolies. We separated at the river junction below Pheriche, the larger caravan moving left towards the Khumbu Valley. But the clear weather that we had been having hitherto now broke. That night four inches of snow fell, and the party feared for the coolies who were unprotected by snow glasses. Rapid improvisation with black tape and cut up panorama goggles just saved the situation. However, the snowy conditions gave them a chilly night at Lake Camp, the camp by a moraine lake which was our last before Base. Some coolies slept out, others crowded into the few tents that could be spared for them. Many were women, who under these trying conditions were quite as tough as the men. Finally, on April 12th they passed up between the fantastic ice pinnacles of the Khumbu and set our first Base Camp on the mounds used by the Swiss just short of the icefall. Their further operations belong to the next section.

John Hunt's and Evans' parties both camped at the long straggling village of Dingboche, beside the Imja. Evans and Wylie had as chief task the training of some of the élite Sherpas in the use of Open-Circuit oxygen. The training started on the 10th. The Sherpas were delighted at the new toy and most complimentary to the effects produced on them. Most said that it made them feel as if going along the flat, but one, Ang Temba, said it made him feel he was going *downhill*. Evans' party then pushed on up to the wide basin of the Imja and climbed one summit of an attractive peak standing in its centre. This had been seen the previous year by Shipton's party en route for the Barun Gorge and christened Island Peak. It is over 20,000 ft. They then returned to Thyangboche to receive Roberts and bring up the remainder of our stores to Base.

Hunt, Bourdillon, Ward and myself branched south-south-east on the south bank of the Imja Glacier. We explored towards the ridge of the watershed above

the Hongu. On the glacier Ward and I wore Open-Circuit oxygen for five hours without too much discomfort. Hunt and Bourdillon, wearing Closed-Circuit apparatus, climbed a rocky satellite of Ama Dablam called locally Ambugmabjen. Ward and I repeated the climb on the Closed-Circuit test next day. We suffered mainly from heat, but were rewarded by perhaps the most splendid view of the expedition from the 19,000-ft. summit. At our camp here we came nearest to the Abominable Snowman: a whistle down the valley which the Sherpas swore must have been a "Yeti". But alas, we saw nothing.

The party descended to Chukhung, half an hour beyond Ding Boche, and took on coolies from the village to carry the baggage. It was always remarkable how quickly a man sitting on a wall with a baby could settle his domestic affairs and accompany a party for an undefinite number of days. With our kit carried, we moved up to the Pass joining the Emja and the Khumbu Basins. We knew that it was used in summer by yak-herds moving to new pastures, and we always knew it as Yak Pass. We reached it on the second day, hoping from there to climb a snow mountain of 20,000 ft. whose name we learned later as Pokalde. John Hunt however was having difficulty with his breathing, later diagnosed as incipient pleurisy, and he went on down to the Khumbu. Bourdillon, Ward and myself climbed the peak by a graceful snow ridge interspersed with rotten rock.

On the 15th we reached the lake camp on the far or west side of the Khumbu, the site of the Swiss base. Next day Ward and I walked up long stone-strewn troughs between attendant pinnacles and heard for the first time what had been happening on the icefall.

The Icefall

Over the problem of the icefall we had the invaluable advice both of Eric Shipton, whose party had climbed it first in 1951, and of the two Swiss expeditions of 1952. Three members of our party, Ward, Bourdillon and Hillary, had been with Shipton. It was a formidable problem, as one could see, sitting outside Base and examining it; or better still, from the ridge of Pumori opposite. Several of us climbed this to a height of 19,200 ft. and could see both the upper and the lower reaches of the icefall, which winds its way as a great frozen cascade, maze or torrent of ice down from the valley of the Western Cwm which we must reach to attempt the southern flank of Everest. It passes between tremendous precipices fraught with the great hanging glaciers of the western shoulder of Everest on the left, and the sheer cliffside of Nuptse on the right. Seen from Pumori, however, Nuptse appears end-on as a queenly snow mountain, dropping in elegant cliffs and cascades down from its 25,000-ft. ridge to the Khumbu Glacier at 17,500 ft. From Pumori it is obvious that the problem is manifold. First, to find a way at

all. In the Alps any mountaineer in his senses would take to one of the troughs at the sides of the glacier. But here this course is impossible because of the avalanche fire on both sides. There is nothing for it, therefore, but to wind in and out of the gigantic blocks which make up this slowly moving stream; all the way from 17,900 ft., the approximate height of our Base Camp, to the top of the fall at 20,200 ft., where we could have Camp III. In the middle we must have Camp II; for looking from Pumori you can see a snowy shelf rather over half-height, where the character of the glacier changes. It becomes not quite so steep and plastered with blocks. The gaps are wider, the general angle is easier in the upper section, but the route-finding not easy at all. Then, after the way was found it must be made safe for laden porters. Finally, some three tons of stores, including many cylinders of oxygen, must make their way up on the backs of men, so that by mid-May we might be self-supporting at Camp IV, more than half-way along the Cwm towards the face of Lhotse, the next big problem. Camp IV would then become Advance Base.

Hillary considered the route more intricate than in 1951. The party placed their Base Camp on April 12th, and even hoped to carry Camp II straight up on the 13th. Several days, however, were spent in going and returning, cutting steps and fixing ropes, before on April 16th Hillary, Band and Lowe established Camp II (19,400 ft.). This hardly-won Camp seemed at that time very high and mysterious; later, with the heat and the short stays of its occupants, it acquired something of the air of a rather dowdy pension. Another reason for its unpopularity was the general motion of the glacier. Gaps widened, sounds were heard at night, seracs looked like tumbling. In the end Camp II was abandoned and the Sherpas did the whole carry to III in one day.

On the lower section the difficulties were mainly those of steep icework up the ice edges of blocks. There was "Mike's Horror", an ice edge finely led by Michael Westmacott; and "Hillary's Horror", a crevasse-bridge followed by a short and tricky wall. Above this, after a flattish stretch, came "Hellfire Alley"—a wide shallow gully bounded on either side by monstrous ice blocks which nobody liked very much. The Camp II platform itself they approached up a long valley to the left, which afterwards changed very much each time it was climbed. At first it was fairly straight going until an obvious crevasse demanded a bridge at the top. Later, all sorts of unexpected rifts and chasms opened up, making each journey a new adventure.

Above II the ground lay back, but with difficulties of route-finding not made easier by the snow which fell heavily each afternoon from mid-April to mid-May. The regularity of it was depressing; each morning a new track must be broken with only the flags left yesterday to guide. The route itself was intricate and the whole a brilliant piece of reconnoitring. On April 17th Hillary, Band and Lowe, having passed the night at II, reached the final slices of vertical ice above which

it was hoped that Camp III would be pitched. There the level bed of the lower Cwm was just preparing to totter over into the chaos below. One great flake of ice had separated from the rest and leaned slightly outward, leaving a passage. Across the side of this valleyward flake steps had to be cut. The place was christened the "Nutcracker" from the feeling one had that the next bit might fall in and catch the climber between the sides, as if he were a very small nut. Even when the Nutcracker was passed to the right, the line of wall barring entry to the Cwm continued unrelenting. But there was one weakness, a narrow sloping crack led by Hillary. On April 22nd Camp III was pitched by Hunt, Hillary and Band at a height of 20,200 ft., a little way back from the edge and on pleasantly level ground.

The Base Camp site used by the Swiss last year may have been the cause of a diarrhoea which assailed most of us, Lowe and Westmacott in particular. This is no fault whatever of the Swiss, for we found it impossible ourselves to keep the site clean. It is a difficult, if not a hopeless task, to instil the laws of hygiene into Sherpas. Coming down on the 17th Ward suddenly stopped at a point a quarter of a mile down the trough from Hillary's site. "What about this?" It was a low mound forming a bulge in the trough; we might get water from a side stream.

On April 19th therefore, Ward, Westmacott, who had partly recovered from his complaint, and myself, went up and shifted Base to the new site together with Tom Stobart who proved to be an expert landscape-gardener. The job of building a flat platform for the big tent to keep it off the ice took three hours; but when established the new camp proved at first very satisfactory, though by June it was beginning to have a decided aroma.

The next task was to make the icefall safe. On April 20th Ward, Westmacott and I went up with two Sherpas bearing three 6-ft. lengths of duralumin ladder (there were five in all, to be spannered together as needed). We laid two of these over an awkward little crevasse a third of the way up and crawled over. It was amusing to see how cautiously the Sherpas advanced on these ladders and had their loads roped across. Later, when the bridge had been replaced by poles, their boldness increased. Particularly coming down, and when wives or sweethearts might be at Base Camp, they careered across, sometimes without the slightest regard for security. Once a minion of Thondup's cookhouse, who had been particularly anxious to try his hand on Everest, came up in a party led by Wylie. His nerve failed him in the middle and he disappeared. It was half an hour before a very frightened face emerged, never to be seen on the icefall again.

That day we enlarged the steps of "Hillary's Horror" and pulled down a serac, or ice tower, which seemed to menace the route. There were not many seracs that looked likely to respond to this treatment, but ours was small, only 20 ft. high. Ward and I chipped in turn around the base, having a rope held

firmly round the giant's shoulders by the Sherpa Gyaljen. Finally we all pulled and the serac crashed like a tree. Once, some days later, I was asked by Hunt over the wireless to do a like service to another block which threatened the top of the "Hellfire Alley" corridor. This time I was with Sherpas carrying an 8-ft. pole for bridging. The method then was to get a Sherpa to hold me while I pecked at the base. Finally I induced one of them to hold the battering ram with me, and at the second push the mushroom-shaped block slumped down over the track below. On the 21st, joined by Hunt, we cut many steps on the further route to II. And the day after that, Ward lured me up to remove the chief danger of "Hillary's Horror", a crevasse crossing, by swinging the fixed rope round over a little cliff to the left.

At Base Camp there arrived on the 22nd Evans' large caravan with the remainder of our stores, accompanied by Roberts, who had brought the oxygen, Bourdillon, who had gone down to meet him, and James Morris, special correspondent of *The Times*. The party had had trying conditions in the snowfall on the way up. It was on this journey that Wylie recorded sixty men (and women) in a twelve-man dome tent, and eight in a two-man Meade. Among the new Sherpas were Dawa Thondup, a splendid carrier whose career began in 1933, and Ang Nyima, who later carried the highest of all. Roberts had safely handed over his charge, and after spending some days with us, he went off to complete his leave with explorations of his own. Morris had never climbed, but in the course of the next few days he made two ascents of the icefall, a startlingly good performance for a novice. He relieved the leader of much of the arduous dispatch writing.

Based on Camp III, Hillary and Westmacott did much to make the upper half of the icefall route safe and easily negotiable. They cut the steps and fixed the handrail along the Nutcracker, attached to pitons and karabiners, or snap-rings. They also fixed a handsome 30-ft. rope ladder, presented to us by the Yorkshire Ramblers Club, to avoid the final difficult ice-crack up on to the level ground stretching towards Camp III. By means of this ladder the clumsiest Sherpa with the largest load could heave himself safely up and be on easy snow. The ice-crack was avoided.

Despite all this, despite the logs which appeared in increasing quantity to span various crevasses, it was impossible to make the route entirely safe. Gaps tended to widen so that a bridge more than long enough one week might be too short the next. It was necessary sometimes to lengthen bridges, and later on Westmacott did a most necessary job tying poles and finding alternative routes. It was also, of course, impossible to stop the ice blocks which form the icefall from gradually tumbling down; indeed in the later days of the period of load-carrying, a part of the route somewhere seemed to have been covered by newly-fallen fragments every day. At the same time nobody ever actually saw falls cover the track;

nobody knew at what time of day they occurred. The risk was, in fact, infinitesimally small, in all those 2000 ft., of a party being at the dangerous point at the wrong time.

On April 24th it was planned that the period of load carrying which Hunt called the Build-Up should start. The problem was how to convey three tons of equipment to our Camp IV, which should be at the site of last year's Swiss Camp IV, 21,200 ft. A regular ferry service must start and go on for about a month. Loads must be taken to II one day and deposited at Camp III (20,200 ft.); thence taken by another team, based on III, to IV; but the route to that camp had not yet been explored.

On the 24th, therefore, the low-level ferry started. At the same time Gregory and myself, with Sherpas intended for the high-level ferry, accompanied the first caravan in the wake of John Hunt, Evans and Tensing, who had gone up to join Hillary and Westmacott for the further exploration of the Cwm.

At the usual time, between 11 and 1, the routine snowfall started. The party had reached "the island", as we called the roping-up place, below the steeper section leading to "Mike's Horror". At the bridge shortly beyond there was much delay and confusion, not helped by the snow which was now falling very heavily. The Sherpas were still at the stage of disliking the crossing and most of these, you must remember, were the fourteen icefall Sherpas recruited locally for work up to Camp III, not the élite of the Himalayan Club lists. First the loads must be slung across on ropes. Then, one by one, they crawled over. Those who had arrived on the far brink stood around and tangled the ropes for everybody else.

It was always a depressing business, the climb up "Hellfire Alley" to the valley that leads to II. The great blocks beside which you scramble are endless. You look up each time into a greying sky from which snow falls and there are more blocks ahead. Every now and then a yellow, orange or black flag reminds you that you are on the right route; and sometimes, far out on some impossible block over a chasm, a Swiss Bally flag further reminds you that the icefall has moved and changed a good deal since last year.

At last you are moving over the blocks to the right, not made easier by the new snow masking every crevice. You zig-zag in and out, keeping a weather eye for flags. Two little steep sections are a particular effort; the second, between blocks, is known as "Hillary's Folly" because here Ed Hillary dropped his ice-axe into the crack on the first ascent and spent half an hour upside down before he retrieved it. So you come to the valley. This, as you look up, is a gently-sloping trough with rounded sides, which has changed a lot since four days ago. Instead of advancing fairly straight up the trough, you must do a detour round to the left through one or two gaps and then come back to the right-hand side of the trough.

You make a long stride-crossing of a further chasm and finally, at the head of the valley, tread a single section of ladder (later replaced by a pole) over a last crevasse. Then, turning right, you find yourself at last at the level platform on which stands Camp II.

On this occasion Camp II was occupied by Hunt, Evans and Tensing, who had intended to go up to III that day, but had been baulked by the heavy snowfall. Camp II, as I have said, was never very popular. On the regular carries, which started now, it was used only for one night by parties carrying stores to be dumped at III. These consisted of anything up to, and once or twice over, ten Sherpas escorted by a climber. On the second day they would do the upper and shorter section of the icefall and come all the way down to Base the same afternoon. This transitory quality caused the unsatisfactory state of the camp. There never seemed to be enough sleeping bags, the cookers never seemed to work and the tents were uncomfortable from the great hollows which formed underneath them. Moreover, there were two large ice-towers some yards away, of which the one to the left looked as though its collapse might mean the end of Camp II.

All the same I, personally, had a sneaking regard for Camp II. When you came up alone with Sherpas, you could make yourself very cosy, settling down to a late afternoon of reading or writing. But you had always the uneasy consciousness that the snow gently falling was gradually blotting out the track and that there would be a new track to make in the morning. On this occasion, the 25th April, Hunt, Evans and Tensing, with Gregory leading the low-level lift, set out to remake the track. The high-level (Camp III to IV) Sherpas followed, led by myself. Our progress was slow since we had among other items twelve feet of sectional ladder with no spanner to loosen them. The upper part of the icefall lies back at a more easy angle than the lower, but is equally intricate. In the upper reaches the enormous slices of the Cwm Glacier are big single segments to be circumvented. But before this, about a third way up, a bergschrund-type crevasse barred the way. This had called for two sections of duralumin ladder; later, when it widened, first one pole was added, then two were effectively strapped on by Westmacott.

All this time our ladder bumped and swayed against every projection. In the higher reaches the route climbed up to two little cols over depressions in the great slices of Cwm Glacier, until finally, jumping from ice fragment to fragment, the party wound across to the redoubtable Nutcracker. It was not unknown for Sherpas to fall here. The ice-steps were not large and the handrail not satisfying. At last round to the rope ladder, and there was the cheery grin of Tensing come down to welcome the party into camp.

From now the regular ferry service started up this route. Led by Ward, Wylie, Bourdillon, Tensing, Band and Westmacott, parties climbed the icefall, spent the

night at II and finally dropped their loads thankfully at III. The next carry, from III to IV, belongs to the next phase of the story. It was a regular, almost clockwork business. But I think every leader breathed a sigh of relief when his party stepped safely down off the icefall, its loads deposited and every Sherpa present and in good order.

In the middle of the Build-Up period it was planned that everybody, sahibs and Sherpas, should take a rest at Lobuje, the camp lower down the valley beyond Lake Camp. Except for those taking part in the first reconnaissance of the face of Lhotse, this rest would take place in the very first days of May. The reconnaissance party, consisting of Evans and Bourdillon trying out the Closed-Circuit oxygen, Ward and Wylie on Open-Circuit, and Hunt himself in support, would go down to Lobuje later. Everybody went except John Hunt, who never slept below Base Camp.

When I returned to Base from the high-level ferry on May 1st, I found that there had already been a general evacuation. Pugh had gone up to III in order to carry out physiological experiments. It was on this occasion that he opened the precious box and drew out—bottle after bottle of mango chutney. An exactly similar box, containing this delicious addition to our diet, had come up by mistake instead of his medical box. Meanwhile Gregory, Lowe and Stobart had taken the big tent down, also Thondup, the chief cook, to whose delicious scones I had been looking forward all the way down. There was nothing for it but to follow them on May 2nd while Hillary and Tensing made an experimental run on Open-Circuit oxygen all the way from Base (17,900 ft.) to Camp IV (21,200 ft.). They returned the same day, and Hillary came down to Lobuje on the 3rd loud in praise of the benefits of Open-Circuit. At Lobuje there was a haven even in the dreary afternoon snow. Cooking was done in a little croft, while the big tent stood proudly on flat grass nearby. In the warm morning sun it was a pure joy to sit on a bank of tiny primulas by a stream of clear water in which the weeds waved. Everybody here benefited enormously. All slept like dead men, ate enormously and did absolutely nothing. Meanwhile Sherpas passed to and fro, many of them on the way home to make the most of their holiday. Some, who were sick, remained here; for at this time the Sherpas, much more than the sahibs, were suffering from coughs and sore throats. Da Namgyal was the worst and looked very miserable and weak, crouched in the croft. There was also Topkie, who later went twice to the South Col. Of ourselves, Tom Stobart was the only sufferer. He went down with what Pugh later diagnosed as a slight touch of pneumonia. It says much for his constitution that a fortnight later he was up filming above the icefall.

On the 5th May nearly all were back at Base Camp ready to start the second period of load ferrying, which was to land us all, in the middle of the month, at our Advance Base Camp.

On the morning of May 7th Hunt first announced the plan for the later stages of the mountain. There were to be two attempts, one Closed-Circuit (since the Closed-Circuit had by now proved its worth above 23,000 ft.) by Bourdillon and Evans, the two experts on that apparatus, followed at a short interval by an attempt on the Open-Circuit to be made by Hillary and Tensing. The two assaults were to be supported by Hunt and Gregory with five of our picked Sherpas. But before this, the route on the Lhotse Face was to be prepared by Lowe in view of his outstanding ice craft, together with Band and Westmacott. The two convoys of Sherpas for the Col were to be led up by myself and Wylie on two consecutive days. We had some experience of and liking for Sherpas.

Thus all was happily settled and the second period of Build-Up had begun. This time there was a certain change round of personnel. Hunt and Hillary were taking the lifts up the Cwm; Lowe, Band and Westmacott departed with their Sherpas for the Lhotse Face. The low-level carries were led by Gregory, Tensing and myself. The journey had become a routine, but with variations. One day Gregory would wireless down that a crevasse in the "valley" had widened and needed a bridge. Another time it was asked that the bridge between II and III be lengthened, as the gap had widened. What about a crossing further to the right, where the upper lip actually overhung the lower? I was just surveying this when a great slab of it fell into the depths. There was nothing for it but to try lengthening the bridge, an awkward business with a not very intelligent Sherpa helping to tie knots in the middle. And always the afternoon's snowfall, which was making conditions below the Cwm and above very trying indeed. We began to wonder whether the monsoon had arrived already!

The wireless, of which Band was most competently in charge, proved an invaluable help. We had a receiving set whose chief business was to provide weather forecasts, specially prepared for us (and for the expeditions to Manaslu and Dhaulagiri). It also provided the lighter touch of Ceylon and All-India radio. Then there were the light "walkie-talkie" sets which gave communication between camps up to 24,000 ft. Transmission was not always equally easy; sometimes two camps could only communicate through a third some way from each. All the same, for warnings about the route and for requests to bring up food, oxygen or personal requirements, the wireless was quite invaluable.

Ward and Wylie, returning from their rest at Lobuje, came in to help on the work of the icefall carries. Although Sherpas did sometimes make the ascent alone, it was always intended that there should be at least one climber with every caravan. It was not to be thought of that an accident should happen to an unaccompanied party. And in fact, with a number of us at the job and with Tensing, of course, as a climber, it was almost always possible to ensure leaders for every party.

The last lift from below reached Camp IV with Wylie and Tensing on May 18th. From that time the expedition was self-supporting in the Western Cwm. Wylie left an icefall snow-covered and strangely beautiful with its creamy curves and sudden drops into blue depths. At the beginning of June we came to a very different valley, dusty, dirty, shrunken and squashed.

The Western Cwm

Meanwhile there had been much activity in the "Cwm" or basin above. The first exploration had been made by Hillary and Westmacott. They had found, some 300 yards beyond Camp III, the very large crevasse which had been in effect the final obstacle to Shipton's party and had caused great trouble to the Swiss. The first Swiss party had surmounted it by a brilliant piece of ice work on the part of Asper, and had then contrived a rope bridge.

On the afternoon of April 25th three lengths of duralumin ladder were spannered together and laid over the gap, which must have been 15 ft. across. Hunt, Hillary and Evans crossed over, followed by Tensing and myself. Not very far ahead another awkward chasm stopped us. To the left, towards the great ice cliffs of the West Shoulder, the gap narrowed, but it also came under fire from those cliffs; indeed, when we came down in June a part of them had tumbled. Further out into the Cwm the gap widened into impossibility. Tensing and I were looking along the left bank when suddenly Hunt disappeared over the edge. He was cutting steps down to a small bridge 30 ft. below. Arrived at it he found the traverse out easy on the other side. This, known as "Hunt's Gully", was the last serious obstacle.

Next day reconnaissance of the Cwm was pushed further by Hunt and Evans on one rope, Hillary and Tensing on the other. In the morning the Cwm was once again its snowy white self. The party made the crossing of the valley-bed shortly above the second chasm to the foot of the first real rise in the level of the Cwm which we called the First Step. An hour from our Camp III the remains of the Swiss Camp III were visible in a hollow to the right, and for some time there was doubt whether our Camp III should not be here too; but the distance from II seemed quite enough already. However, Swiss cheese, chocolate and orange juice all came in extremely helpful. Many tins of pemmican which we did not use might have served us if we had been delayed in June.

Gregory and I, following with seven Sherpas carrying loads for the proposed site of IV, saw the four small figures disappear up the steeper slopes of the First Step, this step being itself a minor icefall conspicuous by its enormous crevasses. On the right however the way was plain. All was well so far. There were still crevasses, and very big ones, in the early part of the plod towards the right (true

left) side of the valley. But they could always be avoided by detours. We started sticking in flags against the morning when all the crevasses would be covered in. As we advanced it became extremely hot, even though the month was still April and the height 21,000 ft. On the route between III and IV most stripped after 10 a. m. and climbed in shirt sleeves. Even so, everybody arrived at IV perspiring heavily. And at IV itself it was too hot to sit outside in the middle of the day. Of course, at 5 p. m. the temperature dropped very suddenly. We were then very glad of the down clothing which could be put on in an instant.

Above the First Step the glacier evened out again and the walking was very easy indeed. But distances are deceptive; it looked no way to the slight bump which concealed Camp IV, 21,200 ft., but it was an hour's plod involving jumps over the lessening crevasses which still carved up the surface. The site, not far from a very small subsidiary glacier, was therefore first reached by Hunt's party on April 25th. It was to be our home from the middle of May onwards. Till May 1st, when the camp was definitely occupied, it was an increasing heap of packing cases and oxygen cylinders. The Swiss food here again proved most helpful and was kept, as far as it could be kept from the Sherpas, in order to ease the monotony of our diet when we were all up in the Cwm. Particularly welcome were the Vita Wheat, cheese, jam and fine side of bacon. There was also solid "Meta" fuel which we came to prefer to the liquid methylated spirits.

The Sherpa party which did those first carries up into the Cwm consisted of Gompu, small and fat, and our self-appointed orderly, Kancha, large and cheerful, Pasang Dawa, a quiet but experienced Sherpa, Tashi Phutar, a game carrier terrified of anything that looked like a crevasse, Ang Tharke, Pemba Norbu the reliable, and Phu Dorji. The first carries seemed very long and exhausting; almost we wondered whether it was not too far. But even so early as the 30th April, the last carry of the first period, the time had gone down to 3½ hours up, 1½ hours down. The distance itself seemed to have decreased with familiarity.

In the Cwm parties did not wear crampons. This was partly because our crampons had broken so badly lower down that Sherpas arriving at III for work in the Cwm were made to send down their crampons for their brethren working on the icefall upon which it would have been suicidal to set foot unshod. Thus the descent through afternoon mist and the snow, whose very flakes felt hot, in that cauldron of a valley, was a slippery tricky business but at the same time very happy. Sherpas were always in a good mood descending to III. Their work was done and they sang and chatted and thought of the mugs of tea awaiting them below.

Sometimes the returning carriers would find the low-level team still at III preparing to set out for Base. Then there would be tea together, with everyone

sitting in and out of the falling snow. Those based on III would congratulate themselves on being up here and commiserate with those from below on the rigours of Base Camp. For coughs and diarrhoea were so frequent that we evolved a new disease known as "Base-campitis". The Base Campers would tell how the ice caves were getting on; for under Tom Stobart's guiding enthusiasm gangs of Sherpas were working at caves hacked out of the pinnacles around the site. These it was thought would be very useful when all the tents were needed for higher camps and nothing could be spread for Base. But though beautiful by candlelight, they were bleak refuges in the daytime. When the choice came, most preferred to shelter under Thondup's kitchen tarpualin.

During the reconnaissance of the Lhotse Face, which belongs properly to the next section, Camp V was established at 22,000 ft. by Hunt, Bourdillon and Evans. The route took something like two hours from IV in the heavy snow of early May, but later, when the snow had packed down and the track beaten by innumerable feet, an hour was a very usual time.

The going was very level at first, passing 200 yards to the right of the moraine on which is the simple stone tomb of Mingma Dorje, the fine Sherpa killed on the Lhotse Face the previous year. It then kept towards the left of the rise known as the Second Step, an uncomplicated series of big crevasses similar to the First Step. Suddenly, just as you were thinking you could go no further without running straight into the shining ice wall of Lhotse ahead, the orange Meade tents of V would appear.

Camp V was the jumping off place for the face. Parties spent only one night there and it had therefore something of the dowdy air of Camp II. But its site, right at the head of the Cwm, was as beautiful as any on the mountain. After the Lobuje respite and the reconnaissance Hillary took over the ferry from III to IV which though often trodden was terribly laborious in the heavy snow. Hunt established himself at IV and took charge of loads going up to V, oxygen cylinders in particular, all in preparation for the next great problem, the crux in some ways of the whole expedition: the Lhotse Face.

Lhotse Face

The problem of the Lhotse Face exercised John Hunt long before the expedition left England. Partly in order to receive the help and advice of the Swiss climbers who had tackled it last year, Hunt and Evans flew out to Zürich shortly before we left. The help of the Swiss, with confirmatory evidence of photographs, was most generously given. On the way out and at Base Camp much time passed in examination of the photographs.

The problem is two-fold: first, to reach the 26,000-ft. Col or saddle between Everest and Lhotse (27,890 ft.), its south peak; secondly, to get some 500 lb. of stores to it on the backs of Sherpas, so that two assaults, both using oxygen, could be put in. Whichever way one attacked the problems, this meant an excursion on the ice-face of Lhotse, which stands proudly at the head of the Cwm. The face has two special features: first, just to the right of the saddle, a long spur of rock dropping obliquely towards the Cwm, and at its upper end making a bump of its own in the skyline, before the ridge rises to the battlements of Lhotse. The second feature, separated from the Spur by smooth-shining slopes, is a line of very steep glacier running up the face to three-quarters height and lightly protruding from the straight snow on either hand.

The Swiss expedition of last May paused some time before this obstacle. Finally they chose a line very close to the Spur on its right, and made a stupendous effort to reach the Col in one day, since on these slopes there is no place for a tent. In fact, the party of May 25th 1952 was compelled to bivouac some way below the Spur's top; the Col was reached next day. In the autumn, after the loss of Mingma Dorje on the slopes below, they turned to the glaciated face on the right. Here, after great efforts, they established two camps, a Camp VI at 23,000 ft. and Camp VII at 24,000 ft. From VII a long rising traverse led up over the Spur, now known as "*L'Eperon des Genevois*", and down the 200 or so feet to the Col. This second line, with slight modification, we proposed to follow, but to use Camp VI only while the route below and above was being prepared. The Sherpa lifts would be done in two days, with a break in the journey at VII in order to give two days climbing of approximately 2000 ft. each.

On May 2nd the first reconnaissance party with Hunt advanced from IV to the foot of the glaciated slope, and found the best lodgement on its base. In the very bad conditions they could not go further that day. On the 3rd Evans and Bourdillon, who were using Closed-Circuit oxygen, with Ward and Wylie on Open-Circuit, moved into Camp V (22,000 ft.). On the 4th they followed the prompting of Ang Temba, who had been on the 1952 expedition, and found the intricate line up gullies and chimneys which lead one on a long bulge, the right hand cheek, as it were, of the Lhotse Glacier slanting leftward. In a number of places Swiss ropes were discovered pegged in under the thick snow, but on this long upward slant steps had to be cut the whole way.

On the slope Ward, who was on Open-Circuit apparatus, was found to be in great difficulties. Bourdillon discovered that he was receiving only one instead of four litres a minute. The sudden reduction temporarily put him out of action, and he awaited the return. At another point the cork came out of Bourdillon's own cannister; he was fortunately clutching a piton and able to replace it, but the incident might have been a nasty one. Higher on the slant, Wylie suddenly called

out: "I'm getting no oxygen." This time the trouble was traced to his cylinder, which had given out. However they were by now near to a small platform, marked by the tatters of tents, and Wylie struggled on. This was the Swiss Camp VI. A space was cleared, the tent pitched. Wylie and the Sherpas went down to pick up Ward and return, very tired, to Camp V.

Thanks to Swiss cylinders found at VI, Evans and Bourdillon were able to spend a comfortable night sleeping on oxygen, a luxury always found very conducive to rest when it could be afforded. On the next day, the 5th, they were hampered by atrocious snow conditions. Because of the possibility of the day's fall sliding off the long open surfaces, they were forced over to a more complicated crevasse area on the left. They ploughed on until it was obvious that nothing further could be gained, then they returned. On the 6th May the whole party was back at Base.

The reconnaissance proved two things: first that the Lhotse Face was likely to be a tougher nut even than we had anticipated. Despite our knowledge gained from others, we too ran the risk of underestimating it. Secondly it seemed that the Closed-Circuit, about which most had been very doubtful and which had proved as uncomfortable as it was cumbersome lower down, gave a performance which justified its claims.

On May 7th, Band, up with Lowe at III, succumbed to a bad sore throat and temperature. He was compelled to come down and rest a day or two at Lobuje. He returned as soon as possible to Advance Base, and later led a Sherpa carry to VII. Meanwhile, of Lowe's partners Westmacott was also delayed by a hacking cough, but determined to go up and join the party at V.

On May 10th Lowe went up to Camp V with four of the best Sherpas: Da Tensing, Ang Nyima, Gyaljen and Ang Namgyal. Once again heavy snow had masked the track to VI. With this team Lowe took 5½ hours to climb the final 600-ft. steeper section to VI—a rate of little more than 100 ft. an hour. It was his intention to base himself on VI and spend the time from there cutting steps up and down and fixing ropes. As Westmacott had not yet arrived from below, he asked Ang Nyima, the most experienced of his Sherpas, to stay with him.

Down in the valleys Ang Nyima always seemed rather a good-for-nothing. He dressed flashily, smoked endlessly and drank a good deal. But he was one of those people who ought to be kept well above 20,000 ft., for here he showed his true self. For the next four days he did turn and turn about with Lowe. On May 13th Hunt went up to VI after one of the carries; he found them cutting bucket-steps in the dangerous slope below the camp, and fixing our strong manilla instead of the weakened Swiss rope. On the 14th the two wound their way up the sloping snow terraces, in and out of the half-moon shaped walls of ice, towards the serac 1000 ft. higher that guards the site of Camp VII (24,000 ft.). In the

rarified air (for no oxygen could be spared for the work of preparing the face) they were going very slowly. This journey, in the heavy snow conditions prevailing, took over five hours. But that night, over the wireless, Lowe sent down a cheerful report and a hopeful message that we might well be at the Col in a day or two. We too were underestimating the task.

On May 15th Lowe and Ang Nyima rested. Westmacott, who had been based on V in order to support them with food and bring up loads for later use with the three Sherpas, had found his throat on top of diarrhoea too severe. He had been compelled to give up the brave struggle, and Da Tensing, Ang Namgyal and Gyaljen were doing an almost routine carry on their own up to VI. This was the situation when Ed Hillary and I went up on May 15th. We climbed with these three up through soft but not too tiresome snow, to the platform of VI. As we topped the ice-slope, there was Lowe's ciné-camera whirring away at us. We stood in the snow while I, being due to take Ang Nyima's place on the route, prepared to climb in and join Lowe. Suddenly Hillary said: "I think it would help if I took your tent on. It's not very late yet." At his suggestion I approached the three Sherpas who had already done the hard grind up to VI. They were all game, and that party's time, one hour fifty minutes from VI to VII, was unbeaten, as far as I know, on the expedition. It was a typical "Hillary dash".

Lowe and I settled in for the night, all set to establish Camp VII on the morrow. It was an uncomfortable supper. George had enjoyed his eyrie, he said, with its magnificent views down the valley to Pumori (23,400 ft.), across the Khumbu. He had enjoyed the long chats over the wireless; a fair part of them had been occupied by demands for more food to come up instead of the interminable oxygen. Owing to our good acclimatization we were all ravenous on the Lhotse Face, and the high-altitude rations seemed to us to be planned for hospital patients at death's door. Our supper was slender therefore as well as awkward. The wind had risen by now; it could be heard booming across the Col, and, nearer at hand, whipping the powder snow from the surface and flinging it at our tent, so that we could see the fabric tugging and straining. Supper involved climbing out, hacking off snow to put in the cooker, then watching a great lump melt down to a drop of water and climbing out again for more; chilly work on the hands. It was important to get Camp VII up to-morrow; therefore, to sleep beforehand, I took my first sleeping pill of the expedition, and Lowe followed suit.

Sleeping pills act differently on different people. Mine had no noticeable ill effect: I woke at 6.00 a. m. and prodded across to the sleeping figure; I was still prodding at 9.00 a. m. Once Lowe reached the kneeling position, then went to sleep in that. It was 10.30 before the two of us emerged, heavily laden with wireless and other oddments on top of our personal gear. The wind had done

something to pack down the soft snow; but it had left in many places a nasty breakable crust. We were very slow. Every twenty minutes we halted. Then Lowe, who had far from rid himself of the pill, went to sleep on his rucksack. The route winds left across plain slopes, then right up the base of a 100-ft. ice wall. We had only reached the level plateau at the top of this, 400 ft. above VI, by 12.15. Lowe thought food would help, and I opened a precious tin of sardines. When he actually went to sleep with a sardine protruding from his mouth, it was clear that we had not much hope of reaching VII. Moreover, I was by now very anxious. Suppose we reached somewhere near the site and then I could not get Lowe down? After one more halt we turned back.

Medical advice over the wireless was, helpfully, that he would "sleep it off". Most fortunately he did, and woke bright as a new pin the next morning, May 17th. We made our way quickly, for that height, up the first slopes. The serac which conceals VII is an enormous ice-tower upon whose face parties must delicately traverse, not very adequately protected by the handrail. For laden Sherpas this was one of the hardest sections of the climb; the step-cutting and rope-fixing had been a fine piece of icemanship. We reached the site of VII up the final ice slope and gully, by 11.00 in the morning. After pitching the tent and resting, we advanced to the slope above. Camp VII is protected by a long crevasse cutting straight across the face; but fortunately, 100 yards to the right, it is bridged by good snow leading to a little couloir that tops the ice-cliff overhanging it. We climbed up this, and 500 ft. up the easier slopes beyond, before returning.

By now Ward had arrived with Sherpas, and he took my place with Da Tensing, since I must go down to organise the first Sherpa carry for May 21st. But the next day we saw the three figures turn back from a point little beyond our furthest yesterday. Speculation was rife below, until Bourdillon, who had led a party with loads to VII, returned and reported bitterly cold and windy conditions. In fact, Ward had suffered severely with cold feet and Lowe had a slightly frostbitten hand. Moreover Lowe's tremendous effort on the face was running down. He spent nine days working at it, and it is impossible to do hard work continually above 22,000 ft. without suffering deterioration. The next day, the 19th, the party could not set out at all. Band had led up the Sherpas to VII and gave an impression of the cold violent wind blowing; a wind difficult to imagine in the baking heat of the Cwm. There was inevitably a feeling of disappointment and frustration, together with a tense anxiety over the next move. Till we could reach the South Col, and get our loads up to it, there could be no assaults on the final pyramid.

The plan had been for the first Sherpa carry to go through on a prepared route. When I left Advance Base with the first party of Sherpas on the afternoon of

May 19th, I knew that we would fairly certainly have to make the route over the last 1500 ft. of new ground, as well as, if possible, get the first seven or eight loads over the Geneva Spur and down on to the Col. Lowe might be able to stay on with me, but it was unlikely. He was overdue for a rest. I would, however, have the great advantage of oxygen. According to the original plan no oxygen could be spared for the work of preparing the route; but it would be used by Wylie and myself taking up the two parties of Sherpas, for it was vital that we lead them through, and no job is more exhausting to the leader than shepherding tired Sherpas. Thus I would be able to benefit from oxygen on the double task of the 21st.

I used oxygen from Camp V on the morning of the 20th. At the now abandoned site of VI, we stopped and picked up cylinders and extra loads. Though warned beforehand, the Sherpas seemed unprepared for this. I think that they had, in a carefree way, already added too much personal gear to their loads. At any rate, the journey was long and slow, and nearly all had severe headaches while some vomited unashamedly. Not far from the camp we met Lowe's party coming down; they warned us of the cold they had experienced. It looked as if they had done a fine job getting out at all, on that bitter 18th of May.

At VII all retired groaning to their tents. It was becoming clear that the second plan would be necessary for the morrow, and I fitted Anullu, one of the Sherpas who had tried oxygen on the acclimatisation period, with his set and Lowe's mask. Next morning the situation was the same. Codeine had not banished the headaches, and only one other Sherpa, Ang Norbu, was ready to come on. But Ang Norbu could not, without oxygen, keep up with a route-finding oxygen party, and we most reluctantly left him.

The track across the snow bridge had been stamped firmly. Using two litres a minute, we had soon crossed the slope above and in forty-five minutes passed the highest point of the 17th. The climbing was still on the same type of snow terrace among vertical ice walls. Soon we had a choice: right or left? I went right, and after twenty minutes of step-cutting had to return left. A little wall led to a large steel shaft with manilla rope, the highest point reached by Lowe and Ward. The terraces continued. At one point a line of Swiss rope dangled invitingly, but I dared not use it. A horizontal ledge over a steep drop with a view straight down to Camp V led to the most insecure piton supporting the rope. A few more steps to cut, crevasses to avoid; errors to make and to retrieve; the angle eased towards the smooth straight slope that leads to the base of Lhotse's ugly black rock buttresses.

Suddenly a crevasse larger than most halted us. It seemed to have no bottom and no end, but to stretch interminably in either direction. After walking up and down we picked on the point at which we had first arrived; where the two lips of the crevasse came to three or four feet of each other. But these two lips were

composed of apparently unsupported snow, and the crevasse widened as it went down into the blue-green depths. In the Alps most guides would shake their heads at a party of two on such a place. But there was nothing for it here. I told Anullu to hold the rope tight, having his axe firmly driven in for belay. I stood on one ledge and prodded across at the other, trying not to look down. Then I jumped, drove the axe in hard. We were over. I mention this place partly because, eight days later, I was here again and could not understand why it had seemed such an obstacle. The snow was packed down and marked with crampon-points, the ledges were proved to be adequate, the jump did not seem big at all. For difficulties lessen with every passage.

Above the crevasse, the glaciated segment of the face runs up in a sort of snout into the slopes of Lhotse itself above. From here the traverse leads off left, and at the beginning of it we halted for food. Anullu smoked. Many Sherpas have a capacity for living on cigarette smoke and tea; Anullu is one of them. We set out again at 12.50, and I put him in the lead. Under these conditions the traverse (really a misnomer, for it rises diagonally across the slope) was trying rather than difficult. The snow was ankle-deep, but with patches of hardened crust that needed steps. It leads to a flattened gully at the side of the rocky Spur itself. We made out along a snow gangway to the Spur; I cut some last steps and we were on the crest.

Before it plunges over into the Cwm the Spur is broad and snow-topped. This crown is really a plateau of its own, connected with the first towers of Lhotse and overlooking the Col by some 250 ft., rather less than we had expected. You look over at the great final cone of Everest, whose South Summit hides the main summit behind. Today a line of wind-blown snow-mist veiled it mysteriously. The Col itself, with the wind moaning drearily over it, recalled everything that the Swiss had told us of it. The plateau is about 400 yards square; no snow can linger there, for the wind blows it all away. In and out of the ice are jutting boulders, and on a patch of these, some of them flapping from upright poles, was a heap of yellow rags—the remains of the Swiss autumn camp.

Descending the hardened snow-slope to the Col, I took from my sack a 500-ft. length of nylon line, and attached one end to an ice piton. This "life-line" was to give a moral handrail to exhausted Sherpas, for we had the constant problem of how they would get back, if they were too weary at the Col for the return. I even had in my pocket tablets of Benzedrine, a stimulant which had been tried out on some of them in the ice-fall with the most disappointing results. Wylie recorded that one liked it because it cured his cough; another said it made him sleep very well!

The camp site of the previous year was strewn with oxygen, food, tents. Anullu seized a fine Swiss rucksack containing felt boots. I found it hard to

reason with him behind an oxygen mask, or answer his argument that Tensing had said that if he reached the Col first, he was to have first spoil. He was compelled, in order to take it, to leave his oxygen set, but he preferred the booty. We made our way back over the Spur, in no more than a stiff breeze. The effect of the oxygen was to make me marvel that I was enjoying life and the view so much up here; also to try beautifying the route with extra steps on the way down. We reached VII before 6.00 p. m., to be warmly welcomed by Charles Wylie with his Sherpas, reinforced by Hillary and Tensing.

Watching through the binoculars on the 21st, Hunt had seen Wylie's party advancing from V to VII. But above VII he had seen only the two small figures making their way over the Spur. It was imperative that these loads reach the Col, and on that morning, having received a note from me sent down by the two sickest Sherpas, he took a bold decision. There was nobody who could raise morale for that final stage higher than Tensing together with Wylie. And there was nobody easily available at the moment other than Hillary and Tensing, the second summit pair, who were resting at Advance Base. Therefore on the 21st these two willingly did the climb from IV to VII on oxygen, and were there to greet us on our return. Meanwhile Wylie had spoken to the sick Sherpas and distributed more codeine. Their reaction now was more promising.

The night of the 21st was a crowded one. Camp VII always seemed unduly crowded and therefore the luxuries of life were sparsely distributed. It was here that I discovered Charles Wylie eating cereal off an oxygen-spanner: a very slow manoeuvre as you get very little into your mouth each time. Over a supper cooked by Tensing, we were able to discuss the route; I promised a diagram. There was a feeling of confidence in the air, and of cheerfulness about the Sherpas.

Tensing was determined to get the party stirring early, and cooking started with the first light. When I say "cooking" I mean tea-making, for most of the Sherpas went the whole day on very little more than a cup of tea. The party left comparatively early, at about 8.30, Tensing and Hillary on a rope ahead. From below, the watchers saw seventeen figures emerge and wind their way slowly in and out of the ice-walls. Two figures were in front, remaking the track, stamping and cutting new steps; for the wind at night did its best to obliterate those that had been left with hardened pellets of snow. Finally all arrived at the glacier head, and could be seen advancing over the traverse. Here they became much more

Plate 11: Camp on Island Peak (6185 m., 20,285 ft.) with unnamed peak on the far side of the Imjya Glacier.

Double-plate 12/13: The members of the expedition at Camp IV after the successful ascent: Standing, from left to right: Stobart, Bourdillon, Evans, Wylie, Hillary, Hunt, Tensing, Ward, Lowe, Westmacott, Band, Pugh, Noyce, Gregory. Seated in front, the Sherpa high altitude porters.

strung out, the first party further ahead. Near some rock intrusions one figure stopped and went on no further; almost all were halting frequently. We learned later of Wylie's wonderful work, patiently encouraging them on. The Sherpa who stopped, Kancha, must have given up 400 ft. from the Spur's top. His load included a 20-lb. oxygen cylinder which Wylie, whose own oxygen had given out just then, carried on for him. Altogether thirteen loads topped the Spur and were deposited on the Col beyond.

It was a long time before figures reappeared over the bald snow crest, and below there were many queries why. Had they been compelled to stay? Had the Sherpas failed to make the slope? At last they came, in their groups, evidently all sitting down a great deal. The first party was well below VII by the time the last had reached it. And the last did not reach it before twilight. When it was dark, and when the party at Advance Base was finishing supper, Hillary, Tensing and five Sherpas came into camp. Wylie had stayed up to look after the tired majority, and he did not get them down until later the following morning. It had been a most satisfying achievement, and particularly so in that we had no great reserves of high altitude Sherpas. That was because the more one has, the more food is necessary, the greater is the possibility of serious sickness, and so on. It is a vicious circle. But it was the more important the Sherpas we did have should all prove their worth; which they did, in no small measure, because of the leadership of the three climbers with them, the patience and skill of Wylie, Hillary and Tensing.

In our dealings now with the Lhotse Face we were certainly lucky. The afternoon snowfalls which had badly slowed down the work on it virtually ceased after May 14th. The snow packed down so that by the end of May the track was marked only by the imprint of crampons. This was particularly fortunate as it was a complicated route, and I remember thinking on May 30th that our descent, if fresh snow had fallen, would have been a very different affair. As it was, the route became easier every time it was trodden. It was later necessary to send up five more loads to ensure that the second assault was well stocked. But for the present, it was enough. On the afternoon of May 22nd Evans and Bourdillon, the first assault pair, were able to set out from Advance Base.

The First Assault

It has been said already that the Closed-Circuit apparatus had proved itself on the Lhotse Face reconnaissance; sufficiently at any rate for a serious attempt to be made with it. Clearly it would be an immense advantage if the top camp on

Plate 14: The corniced arête leading up to the summit of Everest, seen from the South Peak.

the south-east ridge could be dispensed with. This would be possible if the apparatus lived up to its promise. Evans and Bourdillon therefore, the two experts on Closed-Circuit, were to climb direct to the South Summit from the Col, dispensing with the uncomfortable ridge camp. If they found the final ridge easy, they were to go on. If not, they would in any case have performed the service of establishing the route so far; on the principle previously mentioned, whereby a route once trodden becomes easier, they would have helped the second party, Hillary and Tensing, who would be following at a short interval on Open-Circuit.

Originally, Hunt and Gregory with our five specially picked Sherpas were to have gone up in support of the second party. But Hunt decided to split the supporters. He would go himself with the first party, accompanied by Da Namgyal and Ang Tensing (Balu). Hillary and Tensing would be supported by Gregory, with Ang Temba, Ang Nyima and Pemba.

Evans and Bourdillon were heavily laden: for in addition to the 36-lb. oxygen set, they had their personal gear. Both parties found themselves going very slowly up to VII, where they spent a reasonable night, using Swiss Draeger cylinders to give sleeping oxygen. The next day, May 24th, was found most trying by all, the Sherpas especially. From below the two parties could be seen moving very slowly indeed up the remainder of glacier, then across the traverse until they disappeared over the Spur. After five and a half hours going Hunt found that his oxygen supply was likely to give out before he had quite reached the top. He therefore left the two Sherpas to come along in their own time, and tied on to Evans and Bourdillon's rope. At 4.00 p. m. they stood on top of the Spur, and were very soon descending the snow slopes on to the Col itself.

Then followed probably the most unpleasant experience of the expedition. All the climbers were tired by their effort, the camp had still to be pitched and the wind was as strong and blustering as the South Col wind can be. Evans and Hunt had their masks off, Bourdillon kept his on for some time as they struggled with the pyramid tent. He could not understand why the others were rolling like drunken men. Hunt wrote of it: "For over an hour we fought and strove with it, playing a diabolical tug-of-war, trying to put up one single tent which can be put up in one or two minutes lower down." When the Sherpas arrived they were little help. Balu, a large and tough man normally, was quite unnerved. He crawled into the tent and did no more than lie. However, he served one useful purpose: he acted as ballast to prevent the tent from being blown away while the others pitched it, and he was able to receive inside items that they wanted out of the wind.

The Meade tent was less trouble; but it was nearly an hour and a half before the three sahibs were in the one, the two Sherpas prostrate in the other. Soon it was getting dark, and inside the tents a confusion of baggage reigned. Evans got the Primus going, Hunt fetched snow, Bourdillon prepared oxygen for the night.

By 9.00 p. m. four mugfuls of liquid each, tea, soup and lemonade, had been drunk and the party felt better—but not capable of going on early the next morning. They must wait a day.

The necessity to wait was tantalising, for the dawn of May 25th was fine. However there was much to be done, apart from resting. The loads on the Col were sorted and tidied, the little six pound "blister" tent was pitched and Hunt moved into it in order to give the Closed-Circuit party plenty of room to make an early start. The Sherpas were rested, although by the end of the day it was clear that Balu would still not be fit to move up, and that Hunt and Da Namgyal must divide the loads which they hoped next day to dump on the south-east ridge in preparation for the second party's attempt.

During the course of the day Hunt walked to both edges of the plateau, looking steeply down the funnel to Camp VII in one direction, and in the other across to Makalu and the great peaks of the Kangchenjunga range. Meanwhile, Evans had observed a flight of small grey birds, apparently migrating across the Col. It is interesting to know that it is used as a pass by somebody. Bourdillon and Evans prepared for tomorrow and adjusted their sets. Despite the inevitable anxiety about the weather and high altitude deterioration, it had been a useful as well as a necessary day's rest.

The summit pair had intended to start at 6 a. m., but owing to a broken valve they were still in the tent after 7.00, when Hunt and Da Namgyal set out bearing their loads. The two made up the easy slopes towards the south-east ridge, and were delighted at last to see the other two figures emerge from the tent and follow after. At an incipient bergschrund, not far from the snow gully up which they were to climb, the two Closed-Circuit users came past, moving at a very good speed for that height. The climbing in the couloir was on steep, hard snow, so hard that crampons left barely a scratch. The angle rose to about fifty degrees. As they went up, the snow became softer, and the leading pair traversed across. Steep but easy ground led on to the ridge, where they very suddenly came upon the remains of the tents left by Lambert and Tensing a year earlier. The struts remained, with fragments of orange rag flapping from them.

After a rest here, watching Makalu and Kangchenjunga fight a losing battle above the rising cloud and the first two climbing strongly up above, Hunt and Da Namgyal made a further 100 ft. of height before dumping their 45-lb. loads. At this point Da Namgyal had reached his limit, and Hunt said afterwards: "I was near enough mine." They built a cairn and even began to scrape a snow platform, forgetting that it was intended to place the final camp still further up the ridge. The height reached was afterwards reckoned at 27,350 ft. Then they turned, bearing empty oxygen frames, for the descent.

By now it was snowing, and the descent, weak as they were after this great effort, was extremely trying. At the Swiss tent Hunt decided to use oxygen again from a bottle left there, but he soon took it off as he received no benefit. In the couloir they moved with great caution, but once Da Namgyal slipped from exhaustion. He was held on the rope. As they approached the Col they could see the figures of the new arrivals strung out across it. They came slowly down, very slowly, and were met on the level ground by Hillary and Tensing. Both flopped down with exhaustion, and when they could not make the final yards to camp, Hillary went off to fetch his oxygen set. Revived by a flow of six litres a minute, Hunt completed the remaining distance after a very remarkable performance; the more remarkable since for part of the time the outlet valves of both sets had been blocked with ice.

When they were last seen above the ledge of the Swiss tent, Evans and Bourdillon were moving very well and with great confidence. They had climbed 1300 ft. in one and a half hours, moving at a speed of not much less than 1000 ft. an hour. The trouble to Evans' set had been put right, though the flow had been set perforce at a fixed rate of two litres a minute. The time was shortly after 9 a. m., and they had covered nearly half the height to the South Summit.

But the going became worse. The fresh snow lying on every ledge needed caution, and made it difficult for crampons to get a grip in the harder surfaces below. In two hours they had covered only about half the distance to the South Summit. They had however reached the prominent, rounded snow shoulder, about at the point which Tensing later indicated as the highest reached by himself and Lambert. On level ground above here they debated an important point. They had two soda-lime cannisters each, and their present cannisters had perhaps an hour's service left in them. On the other hand it seemed sensible to change now, on easy ground, rather than risk having to change them higher, where the angle steepened to the final slope. They therefore changed the cannisters.

Neither of them liked the last 400 ft. Evans' apparatus was not working well, perhaps owing to the new cannister, and he was breathing fast and laboriously. The slope itself was not made easier by the new fall; it consisted of a fragile crust over loose, deep snow, too steep to allow it to be secure. They made over towards some rocks on the left, where the cliffs fall away towards the western brink of the Col. These were steep, but favourably inclined for the climber. They went on, very slowly. Suddenly the angle eased, and they were standing on a snowy summit, looking along a ridge. They were on the South Summit of Everest, at a height of 28,700 ft. The time was after one o'clock.

The peaks were hidden by cloud, which made the view grimly mysterious. The summit ridge itself, upon which it had been a goal of our ambition to look, appeared very formidable. On the left, after a narrow snow strip, there began the

rocks which fell soon in a 7000-ft. precipice to the Western Cwm. To the right, half hidden in a mist which blew before the north-westerly wind, a still steeper precipice dropped from great snow cornices towards the Kangshung Glacier, 12,000 ft. down. Seen under these conditions, and foreshortened so that the farthest point might not even be the summit, the ridge appeared too long. Evans reckoned that three hours might be needed to the top, supposing they surmounted the obstacles. For this and to get down safely they would not have enough oxygen. They very prudently decided to return.

Once they had started down, they realised that they were very tired. The trouble with Evans' set had not disappeared, and they stopped for Bourdillon to adapt it to the Open-Circuit principle. This operation itself was a feat at that height. Later they readapted it, since he was receiving even less benefit. As for the slope, they decided not to worry with the rocks but to plunge straight down in the soft snow. They felt almost too tired to worry about the consequences of a slip. The journey down to the Swiss tent took two hours, and was accompanied by several minor slips. They reached here at approximately 3.30 p. m.

In the couloir below they took precautions, but even so they both slipped. At one point Evans has described himself as hurtling down upon Bourdillon; who, having checked the slide, proceeded to do the same himself. By the time they were plodding across the level Col they were utterly weary. When those at the camp came out to meet them, they sat upon a stone and continued to sit, in the bulky down clothing and with frost upon the little of their faces that showed. This scene is very movingly recorded by Lowe in the Everest film.

They had done what they set out to do. The Sherpas, of course, to whom the South Summit appeared to be the summit, had thought that the top was reached. When the two tiny figures arrived at their highest point, there had been great excitement and cheering. If they had not reached the top itself, they had done an astonishing thing. They had climbed higher than men had ever climbed before, and had nobly proved the Closed-Circuit apparatus by making the unprecedented rise (at that height) of nearly 3000 ft. in one day. They had established the route so far for the benefit of the second pair, who would now have greater confidence as far as this point. It had been a memorable day.

The night of the 26th was extremely crowded. In order to leave the second party more room in the pyramid, Hunt, Evans and Bourdillon crowded together in the two-man Meade. The wind constantly battered and buffetted the tents, making sleep impossible. The temperature was –25 degrees Centigrade, and for those whose third night it was on the Col, there must be added high altitude deterioration of the body. In the morning, with the wind still blowing, all huddled into the pyramid for a council of war, while Tensing got the Primus going. It was clearly not a day for the second attempt; until midday it was not even a day for

descent. But at midday Evans and Bourdillon started down, taking Ang Temba, a Sherpa from the second party whose condition was so poor that he clearly could not go higher.

Suddenly Evans reappeared in the tent. Bourdillon was unable to climb the slope up to the top of the Spur; another climber was needed to help him. Hunt, who had hoped to stay on the Col, chose to accompany them; and at last all four set off, very slowly indeed, up the slope, then down to the traverse. On the traverse they were being watched by Ward and myself. We had come up again to VII, partly in support, partly to carry out alveolar tests for which Ward was enthusiastic. On the 26th we had received and succoured Balu and Da Namgyal, who were being escorted down by the brothers Anullu and Da Tensing. Balu lay there in a bad state of demoralisation. Da Namgyal was very tired and suffering from a frostbite on one finger, about as big as a penny, from which he recovered in a week. This was the worst casualty of the expedition. Earlier in the day we had also received three more Sherpas, descending from the second carry of stores which they had made, under Lowe's direction, to stock the second assault party. These were the veteran Dawa Thondup, Ang Norbu and Topkie. These three, with Anullu and Da Tensing, were making a second ascent to the Col; and yet they looked as cheerful and as undaunted as ever. They went on down, while Anullu and Da Tensing stayed to nurse and escort the others down on the 27th.

On the 27th we sighted Hunt's party on the slopes below the Spur shortly after 2.00 p. m. But it was after four o'clock before they were traversing the final slope, and while Ward got the tea ready, I went out along the flat to meet them at the crevasse bridge. I was about to shake hands with Hunt when over his right shoulder I saw Ang Temba diving straight into the crevasse. Poor Ang Temba! In his exhaustion he must simply not have cared where he was putting his feet. He was held finely by Charles Evans, last on the rope. Bourdillon and Hunt at the bottom of the bridge were almost too tired to move. It was possible for me to climb out past them and hook the Sherpa by his load (he was completely upside down). After a struggle he came up like a fish, being fortunately a very small man.

Back in camp we discussed who should go down. Hunt had asked me to go up as support or reinforcement to the second summit pair. That would mean stores from below, and who could go and order them? Ward for one. Then Evans, quite unexpectedly, said that he could go. The two got ready, and at 5.00 disappeared over the edge. Then I started catering for the very tired men who remained. Ang Temba was much the worst, groaning and refusing anything except drink. The others, though very weary, ate their supper, and it is notable that Bourdillon, really exhausted as he was, rose to the occasion and repaired a mechanical defect in the Primus.

On the next day this party too descended to Advance Base.

The Summit

It had originally been hoped that Hillary and Tensing would be able to follow the first summit party at a twenty-four hour interval. But they needed a rest after their exertions on the 22nd. Also, it became increasingly obvious that at least five more loads would be needed at the Col to ensure this second attempt being adequately stocked. Therefore the Sherpas to do the carry would need a rest too.

Thus the second summit party with its supporters set out at a forty-eight hour interval, on the afternoon of May 24th: Hillary and Tensing; Gregory with Ang Temba, Pemba and Ang Nyima; Lowe with the South Col Sherpas who have been mentioned already but whose names deserve to be recorded separately: Dawa Thondup, Ang Norbu, Topkie, and the brothers Anullu and Da Tensing. All these were going up for the second time, and the whole party spent the night at V.

On the 25th they reached Camp VII and on the 26th, as has been recorded, they arrived at the South Col in time to welcome the first party to camp. The morning of the 27th was too windy for an early start, the temperature when they read the thermometer on the tent wall was –25 degrees Centigrade. They too lay low for the day, and at midday saw the first party off down the slopes; all but Da Namgyal and Balu, who had gone down with the South Col Sherpas yesterday, and Ang Temba, who was so exhausted by his arrival on the Col that it was advisable to send him down too.

The wind continued all day, but despite it the preparations for a start the next morning went on in a spirit of grim desperation. Oxygen sets were adjusted, food put in rucksacks. The wind continued in the night, but all were breathing oxygen at one litre a minute and this gave some sort of sleep for seven or eight hours. At 8 a. m. of the 28th it had eased, and they decided to start. Everybody felt that it would not be possible to postpone the attempt another day, for deterioration must then have set in and they might be too weak to go on. But meanwhile there had been another set-back. Pemba, who had been picked for his strength lower down, had been ill all night and could not go further. His illness meant that his load must be divided between the others, after some less essential items, including some of the oxygen, had been removed. At 8.45 a. m. the first party, the supporters, moved off, carrying some 40 lb. each and using four litres a minute. Hillary and Tensing, conserving their energy, started later; they were carrying 50 lb.

Slowly the climbers crossed the plateau and started up the gentle slopes leading to the steep snow gully. Hillary and Tensing profited from the bucket-steps cut by the leading party, until they emerged suddenly, as the others had

done, at the tattered fragments of the tent occupied last year by Lambert and Tensing. As they rested, and the photographers took many pictures, Tensing must have had vivid memories of the night of May 28th, 1952, one of the most remarkable nights in mountaineering history. He and Lambert had crouched here, without sleeping-bags and without cookers, trying to get something to drink by melting snow over a candle.

At the dump left by Hunt and Da Namgyal they stopped again. The height, 27,350 ft., still seemed too low for a camp. This meant dividing the loads again and going on still more heavily laden than before, with 40, 50, and in Hillary's case 63 lb. Despite this they were going very steadily, the supporting party making the route. The strata of the rock, though plastered with snow, gave good foothold. Finally the rock gave way to pure snow, and by 2 p. m. they were looking very anxiously for a camp site. Every ledge from below looked very flat and commodious; but when they reached it, it would be at an angle of forty-five degrees.

They were getting desperate when Tensing, who said he had been to about this point last year, suggested crossing to the left, and at 2.30 p. m. they had decided on a comparatively flat piece of ground under a rock. Here the supporting party, which had done its job and made the camp possible, turned with relief, said goodbye to the summit pair and made off down the ridge. The height was later reckoned as 27,900 ft.

Hillary and Tensing removed their oxygen sets and started making a platform. When the surface snow had been removed, it revealed rock set at thirty degrees. This had to be prised away, until they managed to level two spaces a yard wide and six feet long, but at different levels. It is notable that though they had taken off their oxygen, the effect lasted sufficiently to enable them to do hard work, though they had to rest every ten minutes. At last the platform was built and Tensing was heating soup, while Hillary inspected the oxygen supply. This was not now, of course, as large as had been originally intended. They would be able to use only three litres a minute instead of four. But he reckoned on finding two bottles left by Evans and Bourdillon some hundreds of feet above the camp, and using these for the return to the South Col.

They ate sardines on biscuits, tinned apricots, dates and jam and honey. At first the evening was gusty and Hillary, sitting against the slope with Tensing below, was able to brace himself at the warning whistle and hold the tent steady. They had enough oxygen to allow four hours sleep at one litre a minute, and this they used from 9 to 11 p. m. and from 1 to 3 a. m. Sleeping oxygen was very pleasant until it ran out; then they began to feel cold and miserable, for the temperature was −27 degrees Centigrade. Fortunately the wind had dropped.

At 4 a. m., May 29th, the light was creeping up, and they were able to pick out, among the dark sleeping valleys, the monastery of Thyangboche, where the monks might even now be offering prayers for the expedition. Boots must be thawed, sardines and biscuits eaten and lemonade drunk in a determination to stave off the feeling of dehydration that assails a man at great heights. The oxygen sets were dragged into the tent and checked over. At 6.30 a. m., drawing windproofs over their heads and with hands encased in silk, woollen and windproof gloves, they climbed out into the early morning.

Tensing led first, over to the left and back on to the lumpy snow shoulder which is a feature of the ridge. From here on Hillary took the lead; first along a narrow crest taken best on its left hand side, where the wind had formed a crust which sometimes held, though it sometimes let the weight of the body through with a thump most trying to the climber's rhythm. This continued for several hundred feet, up to a small hollow in which they found the cylinders left by Evans and Bourdillon, both about a third full. Above this the ridge steepened and broadened to its last 400 ft.—the slope which the first two had disliked. It seriously daunted Hillary, being of rotten snow set at a very high angle. He asked Tensing whether he wanted to go on; and Tensing, being a perfect gentleman, replied: "Just as you wish."

They took it in turns to stamp a track, but were both very relieved indeed to find themselves, at 9 a. m., on the South Summit. Resting, they looked eagerly at the problem ahead. Today there was no mist blowing from the ridge, and they could see every detail. On the right, the formidable cornices overhanging the Kangshung face; on the left, the rock precipices dropping towards the Cwm. The only line was along the snow strip between, which fortunately proved to be of firm hard snow. They moved one at a time, Hillary cutting the steps for some 40 ft. while Tensing belayed round his ice-axe. Where the cornices were very large, they kept well over to the rocks on the left. From here they could see the smudge of Camp IV, 7500 ft. below.

At one point Tensing appeared to be in difficulty. Examining him, Hillary found that the exhaust valve of his oxygen mask had icicles hanging from it and was quite blocked up. After this he kept a wary eye on the exhaust valves, for his own was icing up too.

After an hour's steady going, in splendid weather for Everest, they reached the foot of the rock step on the ridge which had worried us all along. But however much we examined it through glasses, we could tell no more. A famous mountaineer once said that you cannot tell what rocks are going to be like till you have rubbed your nose on them. So it was here. This 40-ft. step might have defeated them, but that a fissure had formed between the rock and the snow of the cornice on the right. Hillary put his back against the snow, dug his crampons

in and wriggled his way up, using any holds there might be in the rock opposite. Tensing followed, landing at the top "like a giant fish". It was some time before they had recovered breath.

After this they felt that nothing could stop them. The ridge continued snowy, still firm and hard. Bump succeeded bump in an apparently endless line. As they topped one, another would heave into view. They were getting a little desperate when at 11.30 a. m. Hillary suddenly found himself looking straight down on the North Col and North Peak of Everest. There was nothing higher beyond. It was the top.

The first feeling was one of relief, relief that they had arrived and that there were no more ridges to traverse. Hillary took off his oxygen in order to photograph Tensing, who even behind his mask was grinning with delight. First a picture of Tensing holding the flags, the United Nations flag, Union Jack, Indian and Nepalese flags. Tensing buried offerings of food, biscuits and sweets to the Buddhist gods, while Hillary continued to photograph in every direction. Makalu (27,790 ft.) to the east attracted his attention, so much so that even here he began tracing a possible route up it. Far beyond, Kangchenjunga (28,150 ft.) dominated the horizon. To the west Cho Oyu and the Nepalese ranges as far as Gosainthan (over 26,000 ft.). The most interesting view of all was down the north side, down those slabs up which earlier parties had struggled to within a thousand feet of where they stood. The names of Mallory and Irvine, Norton and Somervell, Smythe and Shipton and many others sprang to mind. The final rise, seen from above, looked very steep indeed.

After ten minutes Hillary was glad to replace his oxygen mask, and they started down. They must move without delay in order to reach the two dumped cylinders before their present supply gave out. Very soon they had reached the rock step, which proved much easier to descend than it had been to climb. In an hour they were once more on the South Summit, drinking lemonade in preparation for the descent of the top 400-ft. slope.

At 12.50 I was coming up over the Spur, accompanied by one Sherpa. There had been three, but I had had to send Phu Dorji down with Ang Dorji, who felt unwell. Pasang Phutar and I divided the loads; he was carrying nearly sixty pounds, I something over forty. Moreover this time there was no oxygen and we were moving very slowly indeed, three steps and then a pause to gasp over the ice-axe. Suddenly there was a cry behind; I looked up to see two small figures descending the last slope directly under the South Summit. The sight spurred me on to reach the Col and see which was needed, rescue or reinforcement or reception.

Meanwhile they were disliking the slope intensely. Its steepness gave a great feeling of exposure, with an impressive view thousands of feet down to the

Kangshung Glacier. They went very cautiously, and when they reached the level shoulder, they had an almost physical sensation of danger removed. At 2 p. m. they reached the tent, now torn from its moorings by a very moderate wind. They stopped here to light the stove and to change over to the last, partly filled cylinders as they drank heavily sweetened lemonade. After an hour they were moving on down again, tired indeed but steady and feeling they could go on.

At the South Col I found Lowe preparing to go and meet them with soup. This would be his fourth night on the Col; his performance on the ridge, after nine days spent working on the Lhotse Face, was as remarkable as any on the expedition. We discussed the activities of the last two days sitting in the pyramid tent, now a draughty spot with a hole torn in one side by the wind. I migrated to the Meade in order to make some tea and follow Lowe up towards them. When I met them, all three were coming down towards me together, and Lowe was waving his axe. "They've done it!" And Hillary said: "Sorry I can't talk much. Oxygen's just given out." It had lasted almost exactly right.

Back at camp in the late afternoon, Tensing retired to the small "blister" tent with Pasang Phutar, Hillary to the Meade to lie flat and above all to drink. Mug after mug of tea, soup and lemonade was consumed by us all. But I had still a duty to perform. I had suggested to Hunt that if they reached the top I would lay out two sleeping-bags on a snow patch of the Spur, in the shape of a T. This would be easily visible through binoculars from Advance Base. Poor Pasang Phutar therefore was dragged away from his rest, saddled with a sleeping-bag and made to trudge back up the slope to the Spur. At last we came to a convenient snow patch, but as the wind was still blowing, the only way to keep the bags down was to lie on them. In this position we spent an uncomfortable ten minutes, while a malicious patch of cloud persisted in lingering between us and the watchers 5000 ft. below. It only remains to add that the signals were never seen, but that Pasang Phutar's opinion of the sanity of sahibs suffered heavily.

Back at the Col we spent a crowded, windy but extremely happy night. The conversation ranged far over the day's exploit and yet we had no idea at all of the world-wide enthusiasm this one climb would produce. The wind still came blustering across the Col, but that mattered nothing at all now. The summit had been reached; not conquered, but climbed.

The morning of the 30th was again windy as we packed up slowly and prepared to go. We left the tents, and everything that we did not think we needed. At 9.30 Pasang Phutar and I set off back up to the top of the Spur, the others a little later. Hillary and Tensing wore oxygen. On the glaciated face below the traverse the wind dropped and it became extremely hot. We were very dry and thirsty as we traversed the slopes above VII, which we thought was unoccupied.

Suddenly we saw figures, and there was Wylie, who had come up originally with the Sherpas for me, and who stayed up in support. He came out with mugs of most refreshing lemonade, and welcomed us to the camp where we could take off our now very hot down trousers. It was a splendid piece of support work, making all the difference to the descent.

Wylie and I stayed with the Sherpas to dismantle the tents of VII. Ang Dorji, the sick Sherpa, had to be nursed down very gently. The other party went on. Above Camp IV they were met by Stobart. He told them not to indicate that the top had been reached, until they were really near Hunt and those who were advancing to meet them. When they did finally wave their axes towards the summit, the others broke into a run. There followed a most untypical scene of hugs and embraces which was exactly what Stobart needed for the film. Upon that afternoon of May 30th James Morris, correspondent of the *Times*, had once again come up from Base Camp, escorted by Westmacott, to see if there was any news. He was able to take down the story at first hand and to leave for Base that very afternoon. Two days later, on June 1st, he was signalling the news from Namche Bazar. It reached England that evening, and by a happy coincidence it became known to most of the world on June 2nd, the day of the Coronation of Queen Elizabeth the Second.

We, knowing nothing of this, spent the evening of the 30th in a state of quiet joy, reunited once more.

The Descent

It remained to get ourselves and our gear safely back down the icefall. The Swiss had told us that, all the time they were up in the Cwm, they had the uneasy knowledge that they must return down this tottering maze. The thought of it hung like a sword of Damocles over their activities.

We too had the consciousness that we must descend, but we were fortunate in having had one man, Westmacott, prepared to devote his time to it. He had done a really splendid job. Coming up from Base Camp he had cut new steps when the disappearing snow made new steps necessary; found alternative routes when ice-chunks barred the path; seen that the bridges were secure with poles tied on to them in cases where the crevasses had widened.

Most of the party was anxious to go down on May 31st, but there remained the task of getting the really necessary stores down. Clearly it would be foolish to risk Sherpa lives unnecessarily in the icefall, minute as the risk might be. But we did not want to leave everything up here. All the tents below the South Col were to be brought down, food to help out our return journey and many other indispensable items.

On the 31st it was arranged that the main party, with Sherpas carrying full loads, should descend. Wylie, Ward, Pugh, Stobart and myself remained amid the dismantling of tents and packing up for the 1st. One party of Sherpas was to descend to III with loads, and return to IV the same day for another carry on the 1st, on which day the Sherpas who had descended right to Base would come up and retrieve the loads dumped at III. Wylie, who was in charge of the descent and the Sherpas at IV, would sleep the night of the 1st at III, and the whole expedition would therefore be finally reassembled at Base on the night of June 2nd. The main burden of the descent fell on the shoulders of Wylie.

It was perhaps the effect of three weeks above 21,000 ft. which made the descent to Base so laborious. Partly also it may have been the reaction from the excitement of yesterday. The parties descending on the 31st described the journey as "frightful" and very slow indeed. Meanwhile, we who remained at IV were finding that our appetites had almost entirely disappeared.

On the morning of the 1st Pugh started early with his physiological equipment. Ward, Stobart and I went down together, after a fruitless attempt to get our sledge-stretcher to move on the now dirty and rough slopes. For the Cwm had changed in our absence. Instead of white, deep snow there were dusty, wrinkled slopes in which the crevasses cut gashes of deeper brown. We took over two hours to reach the site of III, and from there the route was hardly recognisable. Ice towers that had previously looked stately and snowy-crowned now reared up like caricatures of wrinkled old men. We were well able to appreciate the work that Westmacott had put into the fall; in the series of new steps cut; in the two stout logs fastened to the bridge between II and III; in the entirely new route that now avoided the valley below II by cutting straight down from the now unrecognisable site of that camp. Through the mist that blurred everything the whole valley seemed shrunken and squashed, brown with the dust that a dry wind had blown across from the plains of Tibet.

We did not reach Base Camp till after 7.00 p. m., but I for one felt that while the route had been infinitely laborious, thanks to Westmacott, it was not in any sense more dangerous than when we had last been up it. On the 2nd Westmacott organised a last party of Sherpas to go up and help carry loads brought down from IV by Wylie's team. By 1.00 p. m. this party and Wylie's party were down; Wylie himself, after his hard task, suffering from a complaint curious to contemplate in connection with Mount Everest: sunstroke. He went to bed at once with a temperature which fortunately had fallen under Ward's ministration by the next morning. The rest of us looked with great pleasure at the icefall, winding its brown way down between the great enclosing walls of Nuptse and the West Shoulder of Everest. It was a relief at that moment to think that we would never have to go up there again. Anything left in the Cwm must now remain.

During the afternoon Band, who had been twiddling the wireless, managed to pick up fragments of the Coronation Service. And in the evening, to add to the celebration over rum that livened the tents of both Sherpas and sahibs, we were astounded to hear the cultured voice of the B.B.C. breaking the programme to announce that Mount Everest had been climbed—by ourselves. The official seal had been placed, as it were, on a success which hitherto we had hardly dared to believe ourselves.

And now for home, for our families and the gladness of friends, enriched by the memory of a joyfully shared adventure.

MANASLU 8125 m. (26650 ft.)

Japanese Expeditions 1952 and 1953

By Prof. Dr. M. Takagi

RECONNAISSANCE 1952

The first Japanese Himalayan Expedition, consisting of members of the Academic Alpine Club of Rikkyo, succeeded in making the first ascent of Nanda Kot, 6861 m. (22,505 ft.). Another expedition by the Academic Alpine Club of Kyoto was interrupted by the war.

Dr. E. Nishibori, a member of the Academic Alpine Club of Kyoto and of the Japanese Alpine Club, stopped for ten days in Katmandu in February 1952 in order to make enquiries. On his return the Japanese A. C. was entrusted with the task of organising another expedition. The objective was the virgin 8000-m. (26,650 ft.) peak of Manaslu. Preparations began at once, but as it was already too late to do anything in the spring, we had to put it off until the monsoon was over. *Mainichi*, one of the largest newspapers in Japan, financed the undertaking in a most generous manner. We had two objects in view. Firstly to find out whether Manaslu could be climbed at all and secondly to get as much experience as possible for the benefit of future expeditions.

The following expedition members were chosen by the Himalayan Committee of the Japanese A. C.

Dr. K. Imanishi, leader and anthropologist (59 years old), J. Taguchi (39), Prof. M. Takagi, psychologist (39), K. Hayashi, M. O. (26), Prof. S. Nakao, botanist, and S. Takebushi, reporter (45).

The assembly of all the necessary equipment caused considerable difficulty for, owing to lack of time, we had to forego the use of foreign material, such as nylon ropes and had to make do with Japanese equipment. We were also obliged to send everything by air to Calcutta, which in consequence had to be reduced to a total weight of 2 tons. Furthermore, we were only able to procure 3000 pounds in English currency, which had to suffice for all travelling expenses of five members of the party (Takebushi was coming out later on) and a stay of four months in the country. We left Tokyo by air for Calcutta on August 25th 1952, and after four days stay there, flew to Darjeeling where we obtained the services of four Sherpas: sirdar Gyaldzen II, "Pansy" (cook), Sarki and Ang Tsering IV.

We flew to Katmandu via Patna and reached there on September 3rd, the day before the Swiss Everest party arrived. We spent the next ten days in solving the many problems of organisation. The two Sherpas, "Dako" and "Anno", had now joined us, as well as about seventy porters. The student, Dilly Bahudur Verma, acted most efficiently as interpreter and Liaison Officer. We did not forget to pay our respects to the Nepalese Government. At last we were able to set off on September 14th, in heavy and continuous monsoon rain. We followed the route taken by Tilman two years previously, who had been accompanied by our present sirdar.

We marched westwards through Trisuli Bazar and Krughat Bazar to Tarkughat Bazar. From this place we went up the Marsyandi Valley via Khudi. Through a sudden clearing in the mist we got a glimpse of the three giants, Himalchuli, 25,790 ft., Point XXIX, 25,700 ft., and Manaslu, 26,650 ft. From the village of Thonje, at 5900 ft., already of Tibetan aspect, we turned westwards towards Manangbhot along the Marsyandi Valley. The monsoon rain suddenly ceased and almost as suddenly the land turned into a dried up dusty desert.

Twenty-two days later we reached Tilman's Base Camp on October 5th and pitched our own at the same spot at a height of 11,485 ft. The weather was so fine that we were firmly convinced that the monsoon was over, consequently we decided to take a crack at Annapurna IV, 25,680 ft., on October 7th. Our object was to try out our capabilities and state of acclimatisation, and above all to examine Manaslu from the west. The leading party, with Takagi, sirdar Gyaldzen II, two other Sherpas and a few porters, set out in the afternoon. Like Tilman, we pitched our Camp I just below the tree line at 12,800 ft., and on the second day climbed the moraine and put Camp II at 15,750 ft. (Tilman's "Special Camp"). Next day we reconnoitred the site for Camp III on the ridge at 18,000 ft. The route up the ice couloir and over the rocks was rendered difficult by freshly fallen snow. The same evening, the second party consisting of Taguchi, Hayashi and the Sherpa Sarki arrived in Camp II. On the fourth day the Sherpas carried their loads to Camp IV after we had prepared a safe route for them by means of two fixed ropes in the ice gully and over the rocks.

On the fifth day our leader Imanishi went up to Camp II with Nakao. There we discussed our plan and on the sixth day we finally occupied Camp III. Three of us (Taguchi, Hayashi and Tagaki) were suffering from mountain sickness, owing to insufficient acclimatisation; nevertheless, we got to 19,000 ft. with the Sherpas on the seventh day and left some loads there. On the way we passed Tilman's Camp I where we found two broken ice axes and pitons.

The weather had now deteriorated and in fact it snowed on the first evening. We were obliged to turn back at 19,000 ft. as a storm raged all night and it began to snow again the next day. In order to avoid the risk of avalanches, we decided to go down at once, and we were all back at Base Camp on October 17th.

For ten long days we wrestled with Annapurna IV, but owing to bad weather and lack of acclimatisation did not even reach Tilman's Camp II. However, these days were by no means wasted, for we gained some excellent experience and were now thoroughly in training. What is more we were able to get a good look at the west face of Manaslu from Camp III. The mountain has a North Col, which from our viewpoint appeared somewhat repellant; if the Col could be gained from the other side (east), it should be possible to reach the summit plateau.

Unfortunately Taguchi was now obliged to leave us and start for home. The rest of us decided to climb the smaller, neighbouring mountain called Chulu by the natives, so as to get a view of the whole Annapurna massif and to complete the exploration of Manaslu from the west.

Fortunately the weather was now good again and on October 20th we went along a valley towards the south with six Sherpas and eight porters, staying at Camp I (15,750 ft.) just below the tree line. Next day we got up to the foot of the glacier at 17,400 ft. The glaciation of Annapurna is underdeveloped and is all the steeper in consequence. The north side of the Marsyandi Valley is dryer than the Annapurna side, as it is already part of the Tibetan dry zone.

Next morning we went up the glacier and established Camp III on the crest at 19,000 ft. The Chulu mountain consists of two peaks, of which we chose the more westerly, the route leading through the icefall between them. We soon arrived on the south ridge of the west peak of Chulu and attained the summit (20,340 ft.) without much difficulty. The view was stupendous. Annapurna and Dhaulagiri were seen in uninterrupted glory, and over towards Tibet was a range of smaller peaks. We had an excellent view of Manaslu, but the northern part of the North Col was unfortunately obscured by the 23,000-ft. peak which was climbed by Tilman in 1950.

Next day, Imanishi, Takagi and Gyaldzen went further to the east, as we wished to make an accurate examination of Manaslu and its North Col. We reached Base Camp six days later and found that Takebushi had arrived while we were away. After a couple of days rest we returned to Thonje on October 29th, en route for Manaslu. We now formed two parties, the first one consisting of Imanishi, Takebushi and Takagi. Our plan was to make a diversion to the Pass of Namun Bhanjyang (18,976 ft.) and from there to examine the west flank of Manaslu. We did not get there however, owing to heavy snowfall; nevertheless, we did succeed in getting a momentary glimpse of the terrifying south-west face through a gap in the clouds. What we saw told us quite plainly that our mountain was completely unclimbable from the west and south-west.

The second party, consisting of Hayashi and Nakao with porters, went to Bimtakoti (12,000 ft.) below the Larkya Bhanjyang Pass. They climbed

up to this and inspected Manaslu from the north-west, which appeared equally unclimbable.

While en route from Thonje to Bimtakoti, we thoroughly examined through our field glasses the north-west face together with the North Col and north summit of Manaslu, and in our opinion an assault from this side would not have much hope of success.

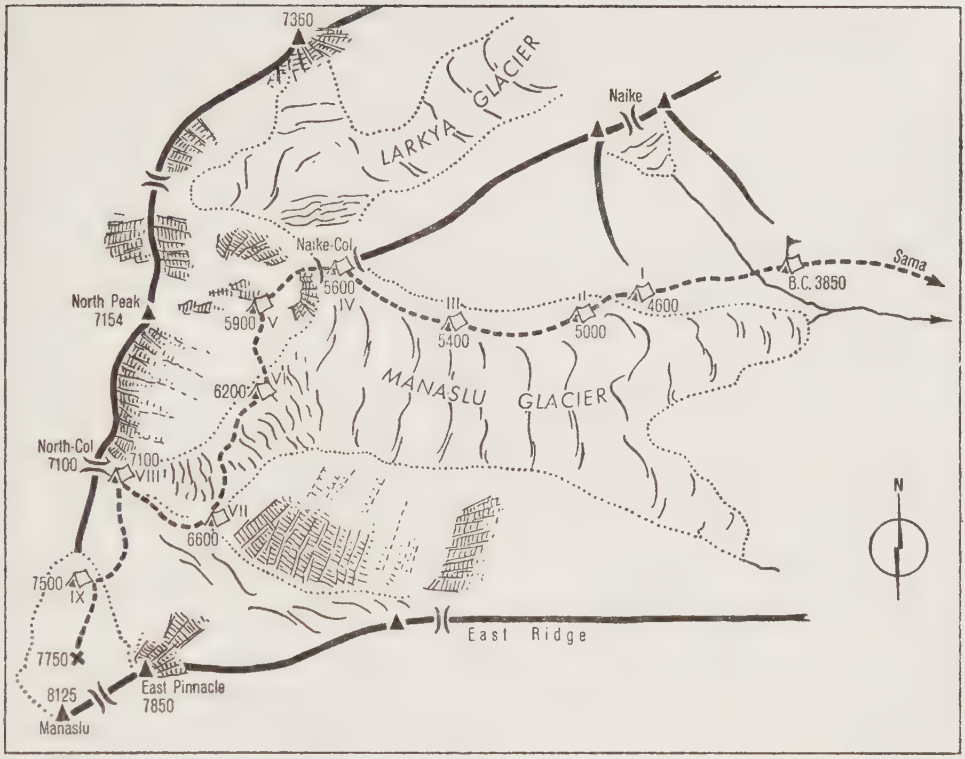
We all met again in Bimtakoti on November 7th and two days later crossed the Larkya Bhanjyang, 17,105 ft. It was fine but very windy on top—an extra trial for the porters. We camped at the end of the Larkya Glacier at 13,775 ft., once more in view of Manaslu. The next day, in beautiful weather, we saw another and more impressive aspect of the mountain. A long stone-covered glacier flowed down its side into the Lakya Valley and above it the North Col and north peak of Manaslu towered up into the blue vault of heaven. We were certain that the mountain could be climbed from this side. The same day Takagi, Takebushi and Hayashi ascended one of the ridges to a height of 15,750 ft. and took a telephoto picture. We noted that from this point it would be possible to attain the Naike Saddle and then, after passing through the icefall, reach the North Col. The key point of all this would appear to be the aforesaid icefall.

We arrived in Sama on November 11th and found that there was an outbreak of typhus in the village. Just above Sama the Manaslu Glacier flows into the valley from the west. As we had an uninterrupted view of the mountain from this spot, we established our Base Camp there. It was now possible to examine the east face of the mountain.

On November 14th Takagi, Takebushi with Gyaldzen and Sarki went on reconnaissance to the north side of the Manaslu Glacier. Camp I was sited at 15,100 ft., just within the plant zone. Next day we set off up the lateral moraine and finally on to the glacier itself, from where we could see the Naike Saddle. In the course of this peregrination I managed to fall into a crevasse and hurt my face. Sarki hurried down to Base Camp in three hours and alerted the first aid party, which came up immediately, led by Hayashi the M. O. On November 17th we were all back at Base, where I more or less recovered in ten days.

On November 21st Imanishi, Nakao and Takebushi took all the Sherpas up the east ridge in order to explore it and study the south side of Manaslu. They reached a height of 17,300 ft. on this ridge. Takebushi discovered tracks of the abominable snowman on the glacier and photographed them. We were now convinced that neither the south face nor the east arete could be climbed.

We finally left Sama on November 29th and were back at Katmandu in seventeen days. The result of this general reconnaissance showed that the mountain could be climbed but only east of Sama, via the Naike Saddle and North Col.



THE 1953 EXPEDITION

The decision to climb Manaslu before the monsoon next year had already been taken by the time we got back to Tokyo. Once again it was the Japanese A. C. and *Mainichi* who were the sponsors. The Himalayan Committee chose the following participants: Y. Mita, leader (52 years old), M. Takagi, leader of climbing party (40), J. Taguchi (40), H. Kato (41), K. Kato (31), Dr. H. Tatsunuma, M. O. (37), Dr. H. Yamazaki, assistant M. O. (28), M. Murayama (34), J. Yamada (30), J. Muraki (29), J. Ishizaka (24), S. Takebushi (46) and T. Yoda, photographer (36). The following scientists were also included: Prof. S. Nakao, botanist, and Prof. J. Kawakita, geographer (32).

We were far better equipped this time and had succeeded in obtaining some equipment from Switzerland; *Mainichi* had issued an appeal in order to put us financially on our feet. Preparations went on apace day and night and by February we were able to ship four tons of baggage. The remaining two tons had to be sent by air, as time was pressing.

The first party, consisting of Taguchi, both Katos and Murayama, left by air for Calcutta on March 4th. They had the job of arranging clearance through the customs and of expediting the equipment to Katmandu. They then flew on to Darjeeling and recruited fifteen Sherpas. The main party, consisting of the leader and ten other members, followed on March 18th, and on March 24th they were all together in Katmandu.

For the sake of mobility we marched in two parties, the first of which, comprising seven, together with Sherpas and 190 porters, left Katmandu on March 26th; the second (six men with Sherpas and about 90 porters) following a day later. The scientists separated from their party on the second day and proceeded independently.

We travelled along the route already well known to us (only in the reverse direction), up the Buri-Gandaki Valley, and made good progress, as the mountain torrents were not in spate as during the previous autumn. To begin with the weather was good but too hot, but after Ngyak, from April 7th onwards, we had thunderstorms every day and snow fell in the mountains.

On April 12th we reached our autumn Base Camp and the second party arrived the next day. We stayed a week here and endeavoured to get acclimatised; unfortunately, the weather was no longer favourable and it snowed right down to the tents. The Base Camp was situated on the north bank of the Manaslu Glacier at 12,625 ft., level with the glacier tongue and about an hour distant from Sama.

Assault day was fixed for April 21st. Our first objective was the reconnaissance of the Naike Saddle, 18,400 ft., where we proposed to establish our Advanced Base Camp. The advance guard, Takagi, Taguchi and Takebushi, reached the Saddle on ski on the third day in driving snow. The second party, K. Kato, Muraki, Yamada, and some Sherpas, joined them the next day, marking the route with red flags as they went.

All were back in Base Camp on April 25th. The various camp sites up to the Naike Saddle were determined as follows: Camp I on the north moraine, Camp II in a trough at 16,400 ft., Camp III on the glacier at 17,700 ft., and Camp IV on the Saddle itself.

We had lively discussions as to the right method of attacking the mountain. In accordance with our preconceived plan, we built up Camp IV as Advanced Base; group 2, with all the Sherpas and some native porters, and group 3 (Murayama, Yamazaki and Ishisaka) partic pated in this work. The first party went up to Camp II on April 30th and placed Camp IV on the Saddle on May 3rd.

Plate 15: View rom above Base Camp across Manaslu Glacier to Manaslu (left rear) and the East Pinnacle (to the right).

Six valuable days were spent in siting the camps, making the route safe and laying a telephone cable to Camp IV.

We had two different methods of communication, a walkie-talkie set and also a cable telephone with an artificial crystal. Unfortunately, the former proved unreliable and we had to abandon it, but the latter gave us excellent service. Originally it was our intention to lay the cable right up to the North Col, but we had not enough cable, as over 6 miles were needed. We eventually set up our "telephone box" 300 ft. below Camp IV. Manaslu was much larger than we had expected, and this misconception was partly the cause of our failure.

Our next task was to tackle the icefall. Starting on May 3rd, we made a five day reconnaissance from Camp IV. Eventually we succeeded in establishing Camp V in a heavy snowstorm at 19,350 ft. and Camp VI, on May 9th, at 20,350 ft., in a trough in the middle of the icefall and below the North Peak. At last, on May 11th, we found a route to the North Col (23,300 ft.) passing the séracs on the left, and pitched Camp VII below it at 21,650 ft. We remained there for four days, partly to complete the installation of the camp and partly to open up the route to the North Col. The weather had been unsettled since the beginning of the attack on the icefall and snow fell every afternoon.

On May 15th we reached the North Col and there established Camp VIII. Next day, Taguchi and K. Kato went on again, but unfortunately it started snowing in the afternoon and the wind was blowing strongly from the north-west.

We began our attack on the plateau on May 17th; K. Kato, Yamada and I formed the leading party, accompanied by the Sherpas Sarki, Gundi, Ang Temba and Mingma Sitas. The weather continued to remain stormy and unsettled and we only got to a height of 24,300 ft. in the afternoon, after wading drearily through deep new snow lying on a steep slope. My two companions dug a hole in the snow and stayed the night there, while I went down with the Sherpas to Camp VIII. The storm raged all night and we were agreeably surprised to awaken next morning to a lovely day. Unfortunately, the Sherpas were so played out that I was not able to be of any assistance to my two companions. They too had had a bad night and decided to come down to us; in any event they could do nothing further without support from below.

Snowstorms swept over the mountain continuously and we resigned ourselves to waiting. As it happened, however, Camp VIII was not suitable for a protracted stay, being insufficiently built up. We were also short of fuel and food. What else could we do but beat a retreat? I led down in very soft snow and we got back to Camp VII in the evening, very tired and depressed.

Plate 16: View from above Naike Saddle of the face rising up to the northern névé plateau, visible from Camp V (see map) to Camp IX on the left of the small peak at the right of the picture. The highest point reached by the 1953 expedition is in the centre of the steep névé slope leading to the summit.

The first assault on the summit plateau had failed owing to the wind and bad weather. We were very wise, therefore, to withdraw right down to Camp IV on the Naike Saddle and recuperate there for six days. We also supplemented our provisions with yak meat.

On May 26th we put in the second assault, as the weather had suddenly turned fine again. We got up to Camp VII in fairly quick time, in the absence of wind and fresh snow, and on May 28th reached Camp VIII. Then the malicious north-west wind started again. As my tent was damaged, I went down to Camp VII. On May 30th the rest of the party, with Sherpas, went up to the plateau and pitched their tent at 24,600 ft. This was Camp IX and was occupied by K. Kato, Yamada and Ishisaka. Our assistant M. O., Yamazaki, and five Sherpas were waiting below at Camp VIII, ready to participate.

May 31st was a beautiful day with a clear blue sky and no wind, and our three friends left at 7 a. m., climbing up towards the summit for five hours. The highest point they reached was 25,400 ft. From this spot the summit was clearly visible, though still a good way off, but its conquest seemed possible without any special difficulty. With heavy hearts, the three turned their backs on the mountain and came down.

By June 2nd we were all back at Camp IV and a day later at Base Camp.

A final word regarding our lack of success is not out of place. We failed to climb Manaslu because we underestimated its size and also because we ran out of food and fuel just short of the summit. Neither technical difficulties, bad weather nor even insufficient acclimatisation were the determining factors; it was our total lack of experience which let us down just below the top. Sir John Hunt, leader of the British Mount Everest Expedition, emphasised that success in the Himalayas is dependant upon long years of experience.

We started back on June 8th and reached Pokhara, over the Larkya Bhanjyang, 17,200 ft. Our aircraft was delayed owing to the monsoon and we did not reach Katmandu until July 7th. The last party got back to Tokyo on July 25th.

Our scientists, Nakao and Kawakita, worked apart from the main party. They reached Kagbeni on April 28th, via Pokhara and the Kali-Gandaki Valley, and then turned westwards into the Keha-Lungpa Valley, ascending the Tieja La, 17,050 ft., on May 8th. They then went back to Kagbeni, crossed the Muktinath Pass (Thorungse, 17,000 ft.) and entered the Marysandi Valley. Their route now coincided with ours of last autumn, via Larkya Bhanjyang to Sama, where they arrived on June 2nd. We were very glad to meet them again. Later they continued their journey to the region of Ganesh Himal and finally reached the Tibetan frontier on July 3rd (Thaple Bhanjyang, 16,070 ft.) and Mura Dazen Bhanjyang, 15,900 ft. They returned to Katmandu on August 13th via Arghat Bazar.

A.A.C.Z. EXPEDITION TO DHAULAGIRI, 1953

By Ruedi Schatz

The longing for the unknown mountains of the Himalaya Range is alive in the breasts of all young climbers, but it is a long way from the dream to the reality, which can only be attained with the help of much luck and unshakeable faith in the practicability of the plan. The actual working out of the plan is an undertaking both very fine and instructive; it involves much hard work but at the same time it provides experience which cannot be gained in any other way.

Our objective, the 26,813 ft. Dhaulagiri, is the highest summit in Nepal, west of the Everest massif, and on clear days its bold pyramid can be seen far out on the plains of India. It had remained a closed book to all climbers until the French Himalayan Expedition set out to conquer it. The French set up their Base Camp in Tukucha and endeavoured to reach the North Col at about 18,000 ft., via the east face and east glacier and thence to attain the summit by means of the north-east ridge. Three separate attacks foundered in the heavily crevassed séracs of the east face, and the attempt had to be called off. Herzog, the leader, now tried to attack the north face direct by means of a valley seen on the map, but the reconnaissance party, consisting of Oudot and Terray, after a toilsome march were not able to reach the north face at all and only succeeded in gaining a pass which lies opposite the massif, separated from it by a wide glacial valley running off to the west.

Oudot took a photograph of the north face from this so-called "French Pass". The picture inspired some hope; all the experts were unanimous in maintaining that there was only one way to the top of Dhaulagiri—from the north. The question of access was a tricky one; the glacier with which the French were faced flowed in a westerly direction, ending up in an appalling icefall, and Maurice Herzog in a letter to me confided that the prospects of finding a way through were slim indeed. Neither did the route via the "French Pass" seem any more inviting, and we were forced to the conclusion that the only way was from the west, through the Mayangdi Khola.

The leader of the expedition was to be Bernhard Lauterburg, sixty years old and leader of our former South American expedition, physically extraordinarily strong, full of enthusiasm and devotion to duty. André Roch placed his long-

standing experience and photographic art at our disposal; Peter Braun, Marc Eichelberg and I were the only beginners, and finally Hannes Huss joined us, with Ruedi Pfisterer as expedition doctor.

On March 15th, Lauterburg, Braun, Eichelberg, Huss and I left Switzerland for Bombay by sea, and thence to Delhi by air. Then followed a 36-hour journey by rail through the heat and dust of the Indian plains to Gorakhpur, where we changed to a narrow-gauge line leading to Nantau on the frontier of India and Nepal.

Here we met our Sherpas, those small brown men with flashing teeth, some in red woollen caps, others in shorts and again others in pyjamas. Each party gazed curiously and a little searchingly at the other, as everybody realised only too well how much could depend upon one's partner. At last the first delays were over and after two days of customs formalities, two lorries rattled along the main road leading to Nepal. We stopped at Bhairava airfield, where all the boxes were unloaded and repacked in blistering heat. Lists were made out and loads made up to 30 kg. in a temperature inviting heat stroke, and every night we crawled half-dead into our sleeping bags where we dreamed of beer, from which we were awakened by the early morning cup of tea! On the third morning thirty wagons drawn by oxen arrived to take our loads to the point of departure. Here waited the old Dakota, glistening in the overpowering sunshine.

The pilot took off with difficulty and for some time the old plane stooged around, just clearing the tree tops, until at last it laboriously gained height and steered towards the first mountain chain. The physiography of Nepal was plainly visible from the air. It revealed itself as an involved hotchpotch of steep brown mountain ranges and deep ravines, not a plain to be seen; in fact, the only two flat places in the whole of this mountainous region are the air strips of Pokhara and Katmandu. The rice terraces girdled the steep mountain sides, for all the world like contours on a gigantic map. At last a valley bottom came into sight and we heard the voice of the pilot on the intercom: "Everybody please hang on to a box, the air field is very bumpy and the loads not very well secured." At last after a perfect touch-down, we crawled out of the Dakota, bathed in sweat.

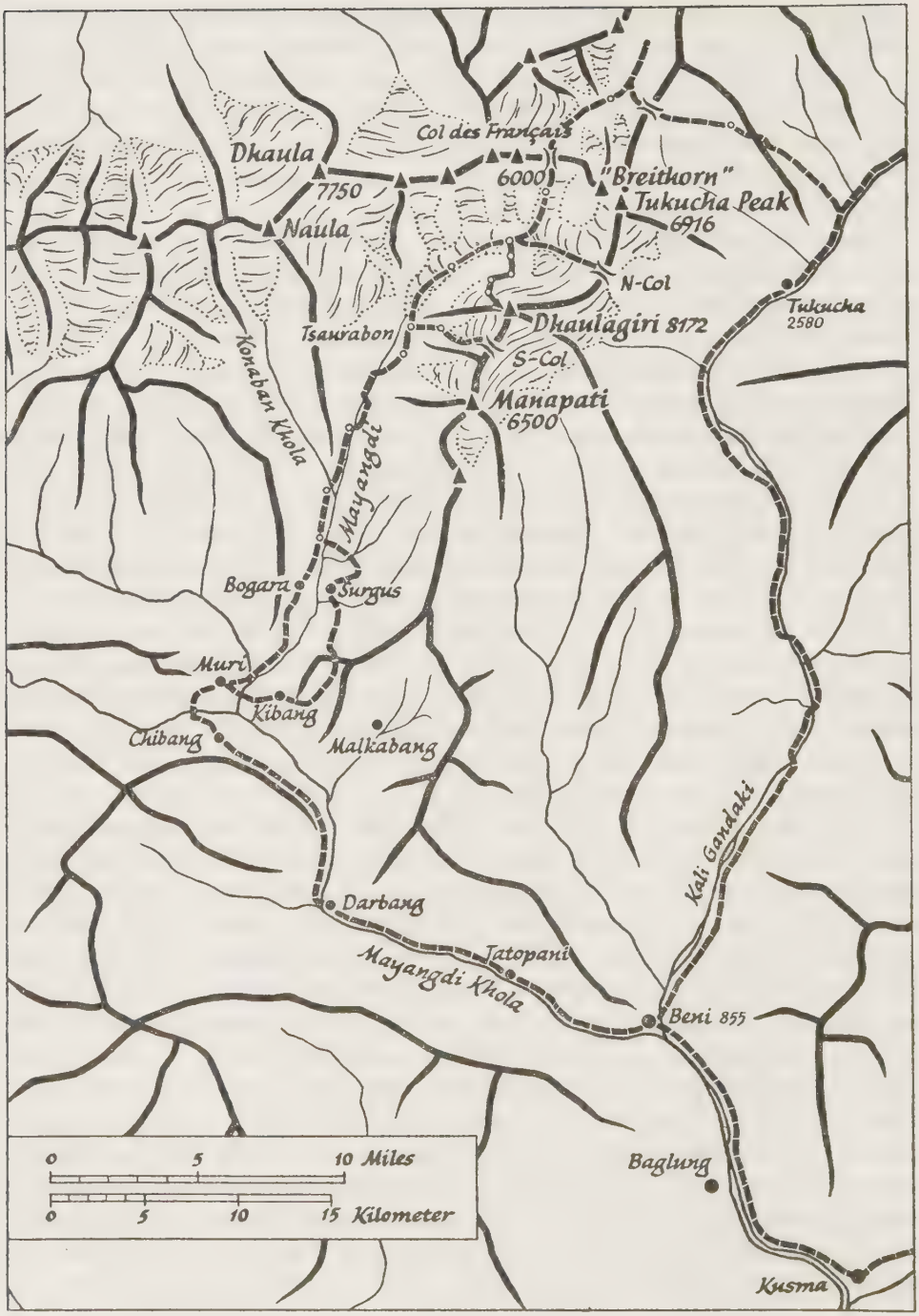
We were in Pokhara, and what a difference from the plain! Cool, dust-free, stimulating mountain air and green meadows. The plane was surrounded by a swarm of laughing Nepalese, the men wearing white hats, black coats, white trousers, and carrying umbrellas. The women were dark-eyed, with a gold stud in the nostrils and a red dot on the forehead, often accompanied by little girls, thumbs in mouth. They had all been waiting for days and even weeks for the arrival of the aircraft which last made its appearance two months ago in their medieval world. And of course, the comical white men were an added attraction, bringing along with them much more equipment than would suffice a whole large village for its lifetime.

The two main rivers of Kali Gandaki and Mayangdi Khola meet at Beni. Here the ways separated. The French took the northern trade route to Tibet, and we turned off to the west into unknown territory. Every day brought its surprises and we had plenty of time to examine it all, for the long column of porters went very slowly. Early one morning we climbed up a steep ridge and there spread before us was the most wonderful mountain panorama which it has been my fortune to behold.

Some 20 miles away, Dhaulagiri reached towards the skies between a framework of rhododendron trees and formed a gigantic wall of perpendicular rock and ice, one summit following another, all between 20,000 and 24,000 ft. in height, towards the west. This was the Dhaulagiri Himalaya, nameless on the map, but bearing various local names, such as Naula, Sherbong, Jeyre Meyre. We could hardly tear ourselves away from this view, and again and again our eyes wandered over the deep gorges, luxuriant forests and the yellow fields of rye towards that shimmering wall, 13,000 ft. high.

Eight days after leaving Pokhara we reached Muri, the last village marked on the map. Close by yawned the entrance to the deep gorge which time and the elements have eaten through the chain between Dhaulagiri and the Dhaulagiri Himalaya. The floor of this gorge was about 6500 ft., and its steep walls rise to some 23,000 or 26,000 ft., not a very inspiring sight for him who would thread its tortuous way. The locals gave us a variety of extremely contradictory information, some said there was no way through, others that it was possible for a short distance only and again their opinion was given that it was completely impassible. This, therefore, was our first crisis; if we could not overcome it, we would have to beat a retreat—at 6500 ft.!

The porters did not want to come along with us, they feared the unknown; however, after two days we had collected all those we wanted. The march began; we calculated three days for getting through, but it took us eight. At first there were tracks of a sort. The one through the gorge often rose and fell 3000 ft.; we crawled along on almost perpendicular grass slopes with the river growling below and only room for one foot before the other, then down rope ladders over rock precipices, through the rain forest clinging to the depressingly steep slopes. How the porters got through with their loads remained a mystery. It rained every night and the dark gorge was shrouded in mist. Orchids grew everywhere—there were said to be leopards and bears, too! Then all of a sudden the game tracks ceased; now it was a question of building bridges and hacking bamboo for three whole days. We cut down enough trees to make three bridges over the foaming mountain stream. And all the time we hacked bamboo, bamboo and nothing but bamboo. It grew up to about 10,000 ft. of almost incredible density and every meter had to be hacked away with the bush knife. After a day of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hacking it was almost impossible to lift a spoon to one's mouth, our hands became covered with blood and we dreamed of bamboo. And all this scarcely more than six miles from Dhaulagiri. The extraordinary thing about this part of the world was its very low altitude, which gave rise to the steep walls and the savageness of the mountains. However, this was unexplored territory and exactly what we wanted.

On May 2nd we reached the upper limit of the tree zone at the foot of the Dhaulagiri west face, nearly 12,000 ft. above sea level. Our mountain shot up another 15,000 ft. above us, straight out of the last trees; it was a terrible face, whose scale it was impossible to determine with accuracy. The valley ended in a still narrower gorge, out of which a small glacier tongue was protruding. Our porters now refused to continue under any circumstances. The distant thunder of avalanches, the black unprepossessing gorge in front of us, looking like an enlarged Lauterbrunnental without vegetation, the close proximity of the snows, all this was sufficient to drive all thoughts of a few extra rupees out of their heads. As already stated, the elevation of the country is low and these people are accustomed to living at 6000 ft. in a mild sub-tropical climate. These are no Everest folk, living at 13,000 ft. To them, snow is something foreign, heights, mountains and cold are terrifying to them.

Finally a hundred and ten returned and six remained with us. We still had two good days marching before we reached a suitable site for a Base Camp. Next day we should have to penetrate into the unknown valley of the Mayangdi Glacier, the Dhaulagiri North Glacier of the French expedition. We hurried on without noticing the height, as we were so worked up. A large spur on the west arête of our mountain blocked the vista into the valley which was to be our home for some time to come. At last we reached a bend in the valley and were able to see round the spur. Before us stretched a wide valley covered with the dirty moraine of the Mayangdi Glacier. Towards the north towered Dhaula, 25,900 ft., part of a summit chain plastered with white névé and blue ice. Far in the background to the north a brown pass could be seen; this was "French Pass". The whole of the south side of the valley was taken up by the north wall of Dhaulagiri, over seven miles long, with its black ledges, icefalls, névés and rock ribs. The Tukucha, with its twin summits and its neighbouring peak, shut off the end of the valley.

The wonder of this virgin territory enthralled us and at the same time we knew we had solved the first problem, access to the unknown valley.

There was no time to enjoy the scenery and as a result of reconnaissances an intermediate camp site was found at 13,450 ft. and one for Camp I at 14,750 ft., about eight hours distant from base. Many days passed before Sahibs, Sherpas and the four remaining porters had carried the ninety loads to Camp I, two days' march away. Much time, energy and patience were expended on this task.

A reconnaissance undertaken by Roch and Eichelberg did not appear to hold out much hope for a successful ascent of Dhaulagiri. The lower rock portion of the mountain is encircled by a belt of glacier, the narrow névé terrace of which is defended by enormous séracs. Above this terrace the mountain goes straight up for 6500 ft., its holdless slopes exposed to every avalanche and without any apparent possibility of establishing a camp. In Roch's view, this face is even steeper and more difficult than that of Lhotse on Everest. The first task was to penetrate the defending belt of séracs. Hannes Huss and I went off on reconnaissance, Braun and Eichelberg assisting us in erecting a tent at 16,730 ft. After a very toilsome, breath-taking ascent through powder snow breast-high, crevasses and much involved step-cutting in hard ice, Huss and I reached the névé terrace at 19,700 ft. It would thus be possible to break through. We now held a council of war. It was already May 13th and we had to make a serious decision: either to make an attempt on the summit and, if unsuccessful, retreat, or give it up altogether and try another 23,000-ft. peak. Time for either eventuality was no longer on our side. After a discussion, we plumped for Dhaulagiri.

Time was getting on and camps and equipment must be advanced with the utmost rapidity. On May 15th the four younger ones, with all the Sherpas, went up to Camp II very heavily laden and at once returned to Camp I. The weather was always wonderful in the morning, but clouds came up about mid-day and in the early afternoon a cold wind sprang up and frequently brought considerable snow with it. Thus, fresh tracks had to be made every morning, and we usually went to ground about 2 p. m. in order to avoid the driving snow.

The next day we went up again to Camp II, climbing up steep and unstable slopes, covered with snow, not difficult but very exhausting. The four Sahibs and three Sherpas remained there. The next day, May 18th, we ascended to Camp III over an exposed rock ridge, terminating higher up in a fine névé arête. The Sherpas had considerable trouble and much belaying was necessary. According to Ang Tharkey, his men had now reached the limit of what they could do. When we arrived at Camp III the clouds were down, snow was falling and it was blowing hard. The four Sahibs stayed behind and the two best Sherpas, Ila Tensing and Gyaldzen, escorted their comrades down to Camp II.

Camp III was situated on an airy ice terrace below the blue séracs, one of which collapsed one morning and roared into the valley close by our breakfasting party. At the moment all was quiet and snow was falling. Cooking was proceeding

Plate 17 : The north face of Dhaulagiri (8172 m., 26,805 ft.). The route starts up the broad cone-shaped moraine visible to the left, then up the steeply ascending ridge above this to the ice-fall which is crossed to the right to the glacier terrace. The 2000 m. (6560 ft.) high summit wall was climbed to a height of 7700 m. (25,255 ft.), to the left of the "Pear" hanging from the west ridge. At this point the climb had to be abandoned because of the real danger of the snow-covered ledges on the face.

apace: soup, grated cheese, roast meat, peas, and fruit compôte consisting of dried apricots. As everything had to be prepared on the primus stove, it all took some time.

The next day, Huss, Eichelberg and I forged ahead through the icefall to find a site for Camp IV. Our luck was in and we succeeded in making a good and reasonable safe track through the chaotic confusion of séracs and crevasses. It was difficult going, however, waist-deep powder snow causing us to pant inordinately. This route from Camp III to Camp IV was used continually during the next few weeks and every morning fresh snow hid the hard-won track made the day before; moreover, fresh crevasses kept opening in the glacier as it descended the steep face accompanied by loud cracking and rumbling noises both by day and by night. After some hours we attained the ice ridge which runs up to the foot of the face itself. Here we were in comparative safety and in a suitable position for launching an attack on the summit wall. We decided to place Camp IV at this spot, so we stayed there for half an hour and then descended to Camp III.

In the meantime the Sherpas had arrived there with more tents and food. Another conference was held and it was decided to carry a tent up to Camp IV next day, leaving two Sahibs there who could have a shot at the summit the day after. Braun was not very well and Huss had a poisoned finger which caused him much pain, so Marc Eichelberg and I were chosen for the job.

The next morning, heavily laden, we set out through the icefall, accompanied by Gyaldzen, Ila Tensing, Kamin and Taski. After surmounting a short vertical pitch, we were able to establish Camp IV on the ridge. Snow started falling again, if only it would finish for good! We were all very tired, even the Sherpas, but were glad to be able to erect the tent, and we crept inside, wet and chilly. The Sherpas went down again and left Huss and me alone, at 19,700 ft. On the first night, we were not able to sleep very well at this height and did not doze off until nearly dawn. At 7 a. m. we left the tent for the attack on the face. This was indubitably the worst day of the whole expedition. It had taken us four days to advance the camps from 14,750 ft. to 19,700 ft., always with heavy packs, and now we were going up to about 23,000 ft. Another crisis was ahead. We could advance only with extreme slowness, ploughing our way through loose knee-deep powder snow overlaying ice. Now and then we encountered bare ice where step cutting was necessary. The slope was continuously steep and seemed never-ending; after three hours hard work the bottom of the face seemed as far off as ever. We had to change the lead every few minutes; moreover, Marc was not

Plate 18: Top: View of Nun (7135 m., 23,405 ft.) from Camp I. Bottom: By ascending the tower to the right it was possible to reach the upper glacier and avoid the ice-fall on the west face.

feeling well and we both had pains in the chest and legs seemingly made of lead. At last we were forced to turn back at midday at about 20,700 ft. We had not discovered any suitable site for a camp, but still believed that the face would go.

Next day we had a good rest while awaiting the arrival of Braun and Huss, who were to come up. The day dawned with a raging wind, filling the front part of the tent with drifted snow. A pallid sun peered inconclusively through the blizzard. We cooked and ate well, and towards midday the storm somewhat relaxed. Our comrades arrived with Sherpas and stayed. Huss had a bad headache and his poisoned finger was causing him much trouble; he had moments of lightheadedness when he talked a lot of nonsense. The doctor came up from Camp III at about 2 p. m. and ordered him down at once. There was no gainsaying this and with heavy hearts we had to let him go.

We were fully occupied next day in getting equipment up to Camp IV. This camp would have to be improved considerably before we could think of undertaking any further attempt on the face. I was suffering from pain in the kidneys and Braun, our deputy doctor, said I ought to go down as well, as I could never get better up there. It was no light decision to leave the field just as the battle was about to commence, but I had to obey and went down to Camp I at 14,750 ft. This camp seemed to me like a luxury hotel compared with conditions higher up the mountain. In no time at all I disposed of over six pounds of preserved plums, followed by a huge helping of real risotto and then sardines.

Huss was there too; his finger had been lanced by the doctor, but he was not yet quite right. The valley air was doing me good, and I recovered rapidly; after another day of rest I was able to go up again. I have rarely been so glad to start out, and I never felt better, physically and mentally, during the whole expedition.

Meanwhile all sorts of things were happening higher up the mountain. Roch, Eichelberg and Braun had succeeded in more or less hanging Camp V to the face just below the first rock ledges. While going up again, this time with Lauterburg our leader, I saw two small figures high up on the face, making very slow but sure progress. This was the morning of May 27th. Roch and Eichelberg, for it was they, had practically reached the top of the wall at about 2 p. m. before they turned back at 23,400 ft.

Their report was that the face was practicable, but that there was not the slightest possibility of pitching a tent. Our fate would be decided there. Camp V was at 21,000 ft., the face was 5250 ft. high and without doubt very difficult in its upper part, and the summit was nearly 27,000 ft. It would be necessary to place two more camps if success was to be achieved. Even with modern oxygen equipment, an ascent of about 6000 ft. and return in one day would be impossible for Sahibs and Sherpas even on the easiest terrain. There were also unusual difficulties to overcome on Dhaulagiri, and our out-of-date apparatus weighed over 30 lb.

and supplied oxygen for only four hours. Indeed we had only brought it along for medicinal purposes and hardly ever intended to use it.

Everything therefore depended on our being able to pitch a camp higher up the face. Roch was sceptical and took a poor view of our chances. Nevertheless, we made up our minds to launch an energetic attack with the object of getting as high as we could. On May 28th, Braun and I went up to Camp V, together with the three best Sherpas, Gyaldzen, Ila Tensing and Kamin. Heavily laden, we tramped up the long slopes to Camp V, the last part very steep. Lauterburg came after us up to 21,000 ft., a great achievement for a sixty-year-old. He went straight down again to Camp IV.

There were five of us in our eyrie. A narrow ribbon of snow connected our two tents. The light evening breeze swept snow down upon us without intermission; it flowed past us like water and in a few minutes had filled the narrow space between slope and tent right up to the ridge pole.

An empty sardine tin clattered down the face in gigantic bounds towards the valley clouds, shining in the evening sunshine; everything was still, even more so than on any previous evening. Peaks without number stood silhouetted against the horizon and deep twilight had settled down over the brown Tibetan plateau. It was the most wonderful mountain evening of my life. Even the Sherpas were silenced. Completely alone, the summit of Dhaulagiri shone far above us. Finally the bitter cold put an end to all this and drove us into the shelter of the tents, the interior of which looked like an old junk shop. Oxygen equipment, food, ropes, crampons, sleeping bags lay higgledy-piggledy everywhere. Added to this, the tent was more than half crushed by the pressure of the snow outside, and we could not refrain from making rapid calculations as to whether this would not sweep us away into the depths. But the tent held, and when the space between it and the mountain was filled, the snow flowed round the tent in uninterrupted streams. Truly a crazy spot!

We cooked a little, chattered about things at home, the mountain, the girl friend and so on. After taking sleeping pills, we sank into a quiet, dreamless sleep. At about 11 p. m. we heard an anxious voice outside exclaiming: "All snow, all snow." The Sherpas' tent was almost collapsed with its pressure, and Gyaldzen was working hard with the shovel. The Sherpas did not like Camp V, it was "no good" and they did not want to stop another night.

Half an hour after midnight, we began slowly to get ready. The tent was more than half full of snow, which we had to shovel out. One Sherpa was to make a track up to about 23,000 ft., the other would carry the oxygen, while we would come last with the food and sleeping bags. Having got to 23,000 ft., we intended to continue alone, bivouac if conditions were favourable and carry on as high as possible.

We left at 2 a. m.; a beautifully clear night. Tensing went ahead and we gained height rapidly, until by daybreak we were close on 23,000 ft. and the surrounding peaks began to light up. A wonderful day. We reached the top of the wall at about 8 a. m. and sent the Sherpas back. We added the oxygen to our own loads and, taking turns to lead, quickly gained height. The shaft of the axe touched rock under the snow at every step; loose powder snow overlay steep slate slabs, very slippery and tiring. There was not a level spot to be seen anywhere on the face. At about midday we reached the bottom of the very steep rock wall, separating us from the summit ridge. It consisted of small vertical limestone pitches, interspersed with narrow sloping ledges. In the French photograph these ledges looked black, now they were plastered with about a foot of powder snow.

Peter belayed while I crept slowly upwards, crampons grating on the sloping ledges. There were no holds and progress was made by friction. The rock was completely unweathered; there was not even a crack in which to drive a piton. Although we were only about 200 ft. from the arête, there was no means of belaying, and I was forced to realise that it would be madness to continue. At the best we could only get to the arête and then bivouac. Further progress to the summit in very difficult terrain, after a night out without oxygen and three days away from our friends, with an extremely exposed descent by *abseil*, would not be justified. It would take weeks to place a camp on the ridge, as the steep access thereto would have to be very well prepared and safeguarded for the Sherpas. Even the climb of 5000 ft. from Camp V would be too much to undertake in the day. Another camp, No. VI, would have to be sited below the steep rock wall, by artificial means if possible. This was out of the question on this occasion.

Our luck was out. Possibly in some years the wall is easier, but it was now 2 p. m. and we had to get back. We looked down from our airy stance to Camp IV at 19,700 ft., 5000 ft. below us. Our friends were there, expecting victory. It was very trying to have to turn back so near to success after two and a half months en route, while we still were in good condition and not exhausted.

We looked around us. Peaks without number stood in the midday sunshine from Manaslu westwards, summit after summit, nameless, unexplored, and inexpressibly beautiful. To the north stretched the brown Tibetan foothills and behind them, looking like a bank of cloud, the Transhimalaya. The atmosphere was translucent blue, in which a few hovering snow crystals danced. The peace of eternity, the high light of a climber's youth.

We had to start back; the journey home had begun.

We got back to Camp IV in the evening and there learned that our three Sherpas had slipped on the way down and fallen 1600 ft. Miraculously, they came to rest just above the séracs and escaped with shock and a few superficial

scratches. After a good night's rest they were laughing over the mishap as though it were an everyday occurance.

We finally decided to abandon any further attempt; there were no sites for camps and we had not sufficient man-power, with the time at our disposal, to enable us to build up artificial camps. The arrival of the monsoon was imminent; we had to get through the great gorge before the rains came or we should be caught like rats in a trap.

Before we finally started back we carried out two minor reconnaissances on the North and South Cols of Dhaulagiri, the former (which was the objective of the French) was reached by Pfisterer and Lauterburg after a long and dangerous ascent. The north arête, starting from this col, would appear to be as difficult as the face we had just quitted. Roch, Huss, Eichelberg and I went up to the South Col. The panorama was stupendous, the aspect of the south face of Dhaulagiri was one of the most horrifying we had ever seen, and the view over towards Annapurna was of unparalleled beauty.

Our way back to Pokhara led us through luxuriant valleys where the rice was at its greenest. There we met the Japanese party from Manaslu and spent some happy hours of mountain comradeship together, in which a football match between a Jap-Sherpa team and a Swiss-Sherpa team played a prominent part. After having waited in vain for a week for the arrival of a plane, we gave up hope and made a series of forced marches, through the torrential monsoon rain and the enormous forests of Siwalik, to Butwal, where we saw our first cinema for many weeks and eventually picked up a lorry.

A wonderful adventure had come to an end. We had experienced difficult times, when everything seemed in doubt; but, combined with searching tests of comradeship and self-control, we had lived days of never-to-be-forgotten beauty.

Summing up, we had exhaustively explored the Dhaulagiri massif, had discovered what was probably the only way up the mountain, and had attained a height of about 25,300 ft. at our first attempt. Dhaulagiri is a very difficult 8000-m. peak; according to Ang Tharkey, it is the most difficult one he knows, and he has climbed on Everest, Cho Oyo, Annapurna and Nanga Parbat. Nevertheless, I believe that, given suitable equipment and sufficient *élan*, a way will be forced to the top. New oxygen apparatus can revolutionise Himalayan climbing. We were quite satisfied that, with the limited means at our disposal, we had done all that was possible.

ASCENT OF THE NUN
(23,410 ft.)

By Pierre Vittoz

FOREWORD

Tilman has said that he who hears the call of the Himalaya would do well to find the road there. However, I cannot help comparing this road to a difficult steeplechase, the major obstacle of which—its big ditch—is obtaining authorisation. Thank God! it had been secured, not without difficulty or delay, forty days before departure. In all innocence and as if to intensify the difficulty, we had asked for authorisation to enter a region that was politically aflame and suffering from spasmodic outbreaks: Kashmir. No more, no less! But has not Corneille's hero claimed that "To conquer without danger is to triumph without glory"?

The aim of this expedition was the Nun (23,410 ft.), the highest point in the Nun-Kun massif, situated east of Srinagar. Why the Nun? Our jobs forced us to undertake a Himalayan campaign during the summer and we had to escape the monsoon; Kashmir seemed to be sheltered from it. We then had to look for a mountain of 7000 m. (23,000 ft.). In my search I came upon a sentence by Marcel Kurz—that doctor of alpine science—in *Berge der Welt*, V, 1950, page 194:

"Is it not strange that the only seven-thousander in the 700-km. stretch between the Garhwal and Nanga Parbat, only 100 km. from Srinagar, the capital of Kashmir, should be virgin? Mountain-lovers take note!"

They did, and they numbered seven: a Swiss, two Indians and four French: an international expedition.

The Swiss, a missionary, had been brought to my notice by Kurz (him again!). Having lived for three years at Leh (Ladak), 100 km. from the Nun, Pierre Vittoz converted souls while occasionally tormenting the six-thousanders. The two Indians had both participated in Himalayan expeditions, Capt. K. C. Johori on that to Kamet in 1952, and Lt. N. D. Jayal (who had flown over Everest after its conquest) on that to Kamet and, in 1951, one to Trisul. The four French already knew something about climbing distant mountains: Claude Kogan (of the so-called weaker sex) and Dr. Guillemin were members of the Franco-Belgian (1951) and Franco-American (1952) expeditions to the Peruvian Andes. Michel Désorbay had led an expedition to Spitzbergen, and Bernard Pierre, after participating in an expedition to the Hoggar in 1951, was the promoter of the Franco-American expedition to Salcantay in 1952.

As to the principal actor, the Nun, it had been the object of two serious British attempts, one in 1934 and the other in 1946, which came to nothing (by the eastern ridge). On the other hand, the western ridge seemed to offer a better chance of success. My conviction was supported by the reconnaissances carried out by Waller in 1937 and Vittoz in 1952.

New Delhi was the assembly point for the members of the expedition and the Sherpas (Pa Norbu, Ang Phutar, Ang Kami, Gyaldzen, Pemba Norbu) under the orders of that remarkable sirdar, Ang Tharke. Only Pierre Vittoz was missing, for his filly «Authorisation» (authorisation

to leave Ladak!) almost fell at the last fence. But taken well in hand, it caught up with the bunch at Doda on July 14th. It was at this little town, situated south of the Nun-Kun massif (the route from Srinagar to Leh having been forbidden at the last moment) that the approach march of about 150 miles began. More than 90 miles of typically Kashmir valleys were first ascended with two tons of material on the backs of mules. At Yurod the mules passed their loads to a hundred coolies. On July 26th the expedition at last delightedly caught sight of the Nun.

I hand over the story to one of the craftsmen of the victory—and what a craftsman!—Pierre Vittoz who, it might be said in passing, seemed to me the perfect model of the Himalayan in heart and limbs and wind, and above all with a stomach ready to digest every kind of preserved food there is (container included). *Bernard Pierre.*

Impatience made me force the pace: the Nun ought to appear at the bend of the valley. Slowly a rock face slid to the left and made it possible for me to see a great snow crest. How beautiful it was! While marching, I began to work out an itinerary on those vast slopes. But what was this? Behind the rock face that was moving aside appeared a ridge of ice. A few more steps and this new ridge was as high as the white crest. Then it was even bigger and the face that supported it became enormous. Where would this immense and rectilinear crest come to an end? At last the pyramid of the Nun rose up in its entirety. Crystalline, glittering under the September snow, it does not dominate any other summit; it asserts itself simply and indisputably. The Tibetans have given it a charming name: *Shel Changma*, "the crystal willow". Even the K'un, almost its twin in height, seems planted there like a dark and hunched subordinate, to form a contrast with the whiteness and purity of its lines.

In that autumn of 1952, a few days sufficed to settle my mind: of the three routes suggested by the mountain's structure, the eastern ridge seemed too long and difficult; the northern ridge led to summit slopes that were too precipitous; the western ridge, steep but regular, was easy of access from the north, whence I was coming, and seemed the best. It remained to climb it.

The Nun-K'un massif is 60 miles east of Srinagar and had already interested more than one Himalayan. In 1903, Sillem discovered the great northern glacier[1] and the snow plateau which separates its two main summits. In 1906 the Bullock-Workman pair spent three months in the massif, climbed Pinnacle Peak (22,737 ft.) and ascended the great Shap'at Glacier to the east. In 1913, Piacenza, the conqueror of the Furggen, climbed the K'un (23,246 ft.). Only in 1934 did anyone attack the Nun (23,410 ft.) the highest summit between the Garhwal and Nanga Parbat. By way of the Shap'at Glacier, Harrison and Waller reached the White Needle (reckoned as 21,980 ft., more probably 21,650 ft.), a shoulder of the east ridge. In 1937 Waller came back to try the west ridge, but with him he had

[1] An ignorant cartographer has named Sillem's Glacier *Ganri* (for Kangri), which is simply "glacier" and truly lacking in originality. I suggest *P'arkachik Glacier*, from the name of the hamlet near its tongue.

The name of the great glacier to the east of the massif, had at first been rendered *Shaphat*, which is correct; later it was *Shafat*, which is not. It is a matter of an aspirated *p* and not an *f*, which is unknown in Tibetan.

only three coolies and, following a paroxysm of toothache, had to turn back with an interesting photo as his only trophy. In 1946 Berry took up the east ridge again, but did not get beyond the White Needle.

Following upon their Peruvian explorations, Madame Claude Kogan of Nice, and the Parisians, Bernard Pierre and Dr. Jean Guillemin, began to take sidelong glances at the Himalaya. With one young man from Lyons, Michel Désorbay, they organised an expedition to the Nun for July and August 1953, and were kind enough to invite me to join them. While I continued to live withdrawn at Ladak on the Upper Indus, they arranged all the details, secured their visas, enlisted two Indian officers, Flight-Lt. N.D. Jayal and Capt. K.C. Johori, and engaged Ang T'arke, with Ang P'ut'ar his brother, Gyaldzen VII, Pa Norbu, Kami and Pemba Norbu.[1]

There was only one annoyance: we had to approach the Nun from the south, which I did not know.

On July 14th we came together near Jammu at the foot of the Chennab Valley, which we were to follow through Kishtwar in order to continue due north, ascending the Marai and Krish Nai rivers. The sun was crushing. Half-naked, we grumbled our way through six stages, always hesitating between the sweat of walking and the grilling that riding on the wretched mules became. The temperature was phenomenal to the point of reducing even the Parisians to silence. The Sherpas were more talkative and as they had come straight from either D'aulagiri or Everest, their reflections on André Roch and John Hunt gave me some good moments. As merry as they were devoted, Ang T'arke and Gyaldzen were to entertain us with their repartee and pranks for two months.

At the end of the mule track, at Naopachi (Napaz to the topographers), a village where all the coolies had to be recruited, there was the traditional comedy: impossible to go higher, since the bridges were destroyed. Besides, there never had been a road there. Moreover, bears were so numerous that no one was willing to leave his village. The conclusion was that the porters demanded seven rupees a day. But Bernard Pierre, with his experience of Arabs and South Americans, was a worthy expedition leader: he secured an overall price of eighteen rupees per coolie for what was to be six days' ascent and three days' return. Luckily there proved to be only one destroyed bridge; a patrol sent out on reconnaissance was able to rebuild it in two days. As to the bears, an inexhaustible topic of conversation, two of them were seen one evening by a party which had probably had too much cognac.

Apart from the bears, our preoccupation was how to approach the Nun. We were fully agreed to attack the west ridge. But how were we to reach it? The

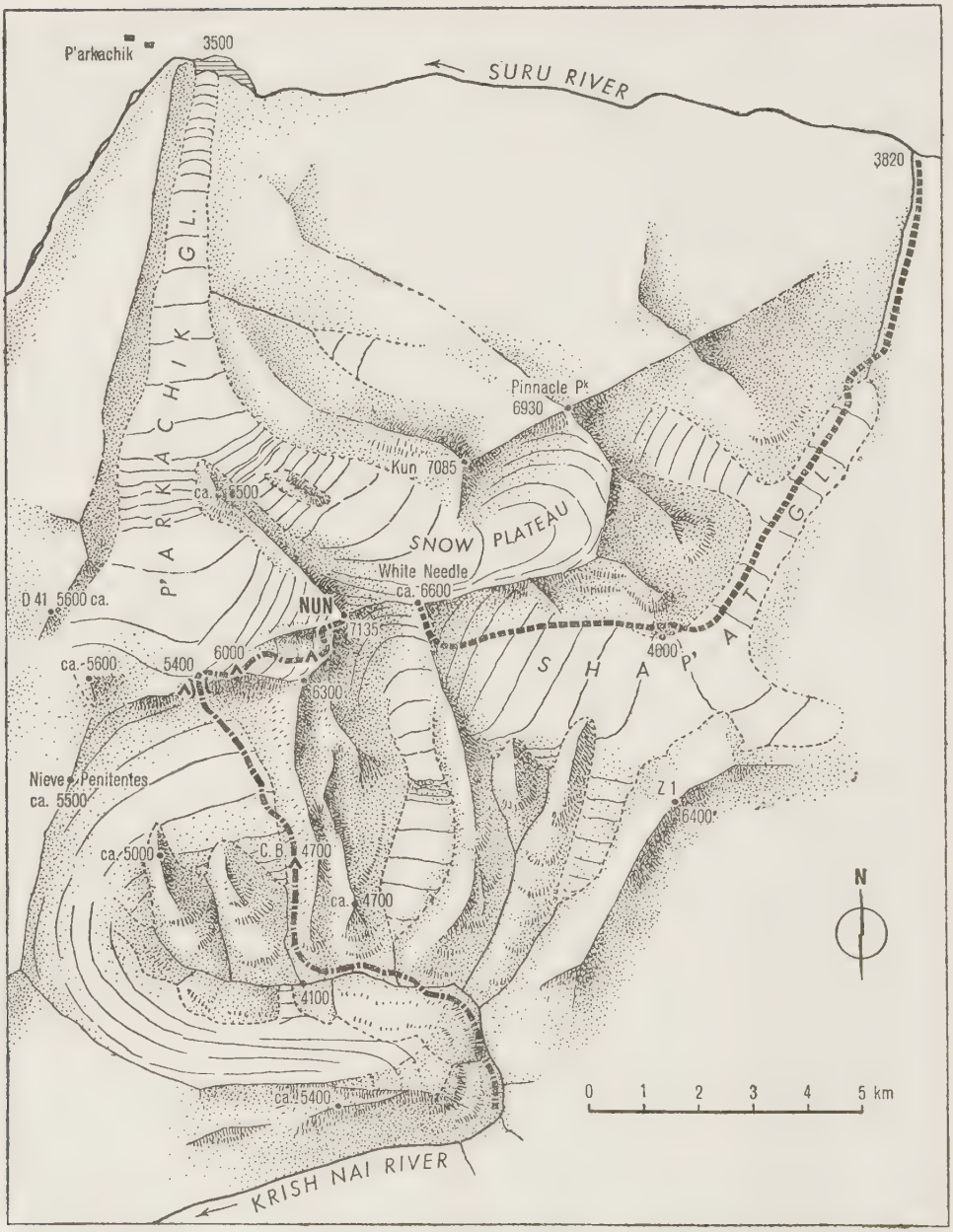
[1] Registration numbers: Ang P'ut'ar 186, Gyaldzen VII 163, Pa Norbu 161, Kami 180. Pemba Norbu, not yet enrolled, was on Everest with Hunt. The names of the Sherpas are often mutilated: I write "Gyaldzen", as the name is pronounced, instead of the official "Gyalgen", which is wrong both phonetically and etymologically. For simplicity's sake, and to make the aspirated letter clear, I have put an ' instead of the ordinary h. Thus, Ang P'ut'ar and K'un.

Krish Nai Valley took us to 13,000 ft., at the foot of the southern side, a formidable precipice. Could we find from there a track to the pass at the base of the west ridge, which was placed at 18,700 ft.? This point, which seems never to have been reached, we called the "Col de Bonne Espérance" (Pass of Good Hope), because we presumed that what followed would be simple. But to get there we had no other data than a vague and fanciful map. So it was with the pleasure of upstarts that Désorbay and I, ascending grass slopes and moraines, on July 29th discovered a gentle glacier which descends straight from the pass, and there we chose the site of our Base Camp near to its tongue.

The next day we led the whole caravan thither and began excavations on the crest of the moraine at 15,420 ft. The Nun was too close to stand clear; its black monstrous rampart overwhelmed us. On the other hand, opposite us, behind a wide white summit, a snow face, cut into grooves, formed a Himalayan counterpart to the fantastic slabs of the Fitz Roy, and we never tired of watching the light and the clouds playing among the hitherto unknown but soon familiar ridges.

On August 1st Pierre, Jayal, the Sherpas and I left in the direction of the pass. The moraine and the glacier were easy and we rose regularly, while the summits surged up around us. At the foot of the pass we halted. Should we climb straight up or seek a way elsewhere? The Sherpas did not fear the slope and after a hard effort we dumped our loads on the dry and sunny side of the Col de Bonne Espérance. A glance at the altimeter showed it was only 17,700 ft., so there were still another 5580 ft. of the ridge before the summit. While Camp I was being set up, we passed the glasses round, surprised and then anxious: the west ridge (the base of which was at our level, 300 yards to the east) at first rose in two great leaps, then lost itself in the south-west face. A secondary rib, issuing from the precipices of the north-west face, then replaced it and rose straight to the summit. Between them, a hanging glacier plunged in séracs to our left after being fed by the upper slopes of the south-west face. But this is what was so serious: the two leaps of the lower ridge seemed impassable. They were too steeply inclined, especially the upper one, which culminated in a large tower. To the right they fell in a vertical wall towards the Base Camp; to the left they were armoured with ice that was too steep.

The following morning, while our companions took photographs on the plateau to the north of the pass, Ang T'arke and I went to prowl about on the staircase of séracs on the north-west face. All the slopes were streaked with avalanche tracks. We did some fine ferreting in every corner, but the staircase was too rickety. And then it became steep; I saw this from the pace of Ang T'arke, who was recutting the steps which I had carelessly made with a blow of my axe. We quickly tired of these unhealthy slopes and went back, passing around the foot of the west ridge. Briefly, this ridge was not so bad; it could be climbed,



The accompanying topographical sketch, based on the official map reproduced in the *Himalayan Journal*, 1947, cannot claim to be exact, for we had not the time and the instruments. Its sole purpose is to illustrate our route and to clarify: a) the complexity of the ridges of the Nun; b) the disposition of the glaciers south of the massif; c) the extent of the upper basin of Shap'at; d) the importance of the elbow described by the Krish Nai and of the massif that it surrounds. For photographs see page 77.

it had to be climbed! Strengthened by this certainty, which confirmed what I had seen the previous year in profile, I returned to Camp I. Pierre, Désorbay and Guillemin had just arrived and were incredulous and recalcitrant listeners: "You're dreaming! Climb that tower at nearly 20,000 ft.? It would be difficult even in the Alps. It's a trap! How are you going to get the Sherpas past it?" In reply, the next day brought a squall that chased us back to the Base Camp.

On August 6th, Ang T'arke, Pa Norbu and Gyaldzen, the three best of the Sherpa climbers, and myself welcomed Madame Kogan to Camp I. The porters made up their minds to tease their missionary: "Precious body, where shall we erect the tent for the lady chief?"—"The lady will sleep in my tent, little brother."—"And what about the proprieties?"—"That will be no trouble."—"But, precious body, you are a lama..." When, a month later, some romantic journalists wanted to headline "a woman and a priest", Gyaldzen, in a sententious tone, commented jokingly: "I told you so; you should take care!" But the lady chief, seated on a stone, did not understand or seemed not to understand. With the glasses to her eyes, she disparaged my find: "We'll be fine on that tower; one day of snow..."

However, the next day we reached the foot of the ridge. The first tower, 650 ft. high, had to be turned on the left through a small valley of ice. The slope was steep but cutting was easy. Bent over the white page of my imposition, I sometimes cast a glance backward to see how my "tourist" was getting along. Perfectly at ease on her crampons, she soon insisted on relieving me. The astonished Sherpas followed lightly with small loads. Half-way up, a rock outcrop provided relaxation for arms and eyes. The slow ascent continued and for lunch we reached the saddle beyond the tower. We did not resist the desire to get to the top of this first tower while Ang T'arke was already searching for a terrace on which to pitch camp. "Just a minute, elder brother", we said, "the day isn't finished yet." The main buttress rose above us for another 1300 ft. Distorted by perspective, it looked easy. And it was. By slopes of broken stone and névés we had soon ascended a third of it, as far as the foot of a ramp of very steep ice overlooking a couloir on the south face. There a rope had to be fixed. The Sherpas installed themselves on the highest rock and began to unroll the thin nylon rope tied to my belt. At the end of two hours they had unrolled about 400 ft. and Madame Kogan went with a snow-scoop to get water for her exhausted companion. Then she took the lead and led us leftwards over some snow-covered rocks. I knew that from this precise point, by crossing the rib of snow that rose up for 60 ft. on our left, we might be able to turn the summit of the tower by a ledge of séracs. But the rib seemed to us too steep and we continued straight on into a mixed terrain that was quite difficult. A little before 5 p. m., Madame Kogan came out on the summit at about 19,700 ft. and began

the descent of the other side, along a thin ice ridge. It would not go; it was too steep and long, and it would be ridiculous to make the expedition pass that way. Tired and bad-tempered, we ascended to the summit again. The south side of our tower was a frightful precipice; on the north, the bulging slope vanished after a rope's length. How were we to cross this single obstacle? Beyond it everything seemed easy: by zigzagging in the nearby hanging glacier, we would reach 21,300 ft. and a snow-slope leading to the upper west ridge and the summit of the Nun. One chance remained to us: the ledge of séracs in the north face. The Sherpas were waiting for us below the tower; I found difficulty in admitting to them that they had brought their sacks up to no purpose, and we went down again all on one rope. At the marked spot, Madame Kogan secured me from above and I crossed a sheet of snow undermined by the heat of the sun. I approached the rib and touched it. Hurrah! On a sérac, a few yards away, began a large glacier ledge which cut the whole northern side of the tower. As soon as they heard the news, the porters placed their loads in a corner and scurried off before twilight, pursued by two triumphant climbers.

After an interlude of snow and rain, on August 10th it was the turn of our three comrades to climb the towers. Bernard Pierre fixed a rope for crossing the snow rib and set up Camp II on the ledge of ice on the far side of the main tower, at 19,200 ft. The next day, with Désorbay, Ang T'arke and Pemba Norbu, despite the mist and the very heavy snow, he ascended the hanging glacier to 20,200 ft., where he pitched a tent. Meanwhile we had arrived at Camp II, where we welcomed them on their return. They were dog-tired and pessimistic: "It's immense, really a world of its own; there will have to be a supplementary camp." On the other hand, the summit slopes—what an illusion!—seemed as easy to them as to us. Madame Kogan, Guillemin and I wanted to improve their track, but the wind and mist sent us back to the Base Camp. This time the weather had completely broken, although Jayal and I had affirmed that the monsoon scarcely touched Kashmir. Humid days stretched out in tents which seemed to grow smaller from hour to hour. Luckily, having found a pack of cards, we were able to kill time.

One night Pierre shook me: "Have you a moment?"—"Yes, even two."—"We're mouldering away here and the days are slipping by. Good weather or no, we must go on up and in force. Three attacking ropes, with Jayal and all the Sherpas in support." It was true; we must act. In the morning the powerful attack conceived by the leader was organised and began to unfold. First of all, the Sherpas went to re-equip Camp I and put its tents in order. On August 19th we followed like thoroughbreds that were being spared. The sky had cleared and the mountain gleamed under fresh snow. There came to me again the impression that the Nun had left with me the previous year: beyond the enormous slopes of

the tower, and far beyond the waves of the hanging glacier, the pyramid stood out in soft and elegant lines. "Crystal Willow!" How right that name was!

Snowfall and wind had made a mess of the staircase on the great tower. I had to recut it throughout the upper slope while sleet beat upon my waterproof hood. At Camp II, the spectacle was comic: the pneumatic mattresses were floating from side to side of the tents; the wind had forced the snow inside and the water from its melting had not been able to escape through the nylon ground sheets. A long job of bailing out—reminding me of happy days on the Lake of Geneva—was necessary in order to return these improvised canoes to their original use.

From Camp II the track was marked by a few flags; first a long oblique ascent to the left, then a slope to the right, finally a circuit in a combe and we halted at the point reached by Pierre ten days before. In the sleet, my friend Bernard drew back his shoulders: his great breadth and his beard had earned him the name of "Black Bear" among the Sherpas. The tent was folded and we went on in snow that became ever deeper, my ski-sticks making a great contribution. At 21,000 ft., at the very foot of the snow face that falls from the summit, we dumped our sacks on a small plateau and installed the third and last camp. Nanga Parbat emerged from the clouds. The afternoon was radiant, with spangles of snow hovering in the sunlight. At nightfall, Guillemin and Désorbay joined us with Kami and Gyaldzen. The other porters, except for Ang T'arke, had gone down again and we were five Europeans and three Sherpas impatient to be on the summit the next day.

The Himalaya certainly mocked our attack in force. The 22nd was not a day of victory, but a day of storm and infernal wind. We rashly sent Kami and Gyaldzen back, to learn later that they spent the whole day straying from sérac to sérac, as also did Ang P'ut'ar and Pa Norbu, who had vainly tried to bring us provisions. The next day, not in the least discouraged, the Sherpas once more left Camp II to join us. During this time we had had to resolve to go down. The snow and the mist were such that we wandered along with compass and altimeter in hand. Ang T'arke and his memory for places came to our rescue, and we were approaching Camp II when we heard our straying porters call. At the same moment the slope slid under our feet. There followed a furious struggle against the snow and a tug of the rope. Guillemin had succeeded in anchoring his axe in the old snow, holding Madame Kogan and me after about 150 ft. The other three disappeared in the fog and the eddies of snow. A mad anguish seized me. Unroped, I ran down the channel cut by the slip. Two men remained on the surface. Ang T'arke hurled himself upon a hand that was sticking up through the snow. He freed a white and contorted face; it was Désorbay, who was suffocating under the pressure of the snow and the rope. Like madmen we scraped around his chest, cut the rope and straightened his horribly arched back.

Guillemin and Madame Kogan ran up, followed by some Sherpas. They freed Désorbay completely, sat him down and rubbed him. Pierre and Ang T'arke were sitting, dazed, groaning at each breath. Surrounded and supported, all three got to Camp II which was only a hundred paces away. Guillemin was busy with oxygen and injections: "Désorbay must get down the towers before the pain revives." We went down in three ropes. Huddled up and strengthless, staggering against his will and despite the track made for him by two Sherpas, Désorbay set out on the great vanishing slopes and step by step drew near to the glacier that appeared between patches of mist. What a nightmare, and how my heart convulsed at each false step and every hesitation! In this new snow, might not another avalanche carry us off? At last we came to the plateau and Pierre's and Ang T'arke's groups emerged from the mist. Thank God we had avoided a catastrophe.

Once more we were at Base Camp. Guillemin declared that there was nothing serious. Bruises and nervous shock prevented Pierre, Désorbay and Ang T'arke from starting out again and the doctor would himself stay near them, with Kami who had taken a bad chill. It was sad to see my comrades eliminated. Now there was only Madame Kogan, our last chance... but a good one. She was by far the best and most active climber of us all and perfectly acclimatised. With her, a light and rapid attempt had every chance of conquering the Nun.

We left as soon as the weather improved. Despite his impaired condition, Bernard Pierre decided to accompany us to guard against anything unforeseen. Ang P'ut'ar, Pa Norbu, Gyaldzen and Pemba Norbu followed us to evacuate the camps. It was a sullen and impatient ascent. We were still suffering from the shock of the avalanche and our holiday was drawing to a close; but our desire to reach the summit grew, and we ascended moraine, open glacier, debris, talus and fixed rope without stopping until we got to Camp II. On August 27th we carried up a tent and sleeping bags to complete Camp III, partly evacuated on our retreat. The slope where we had slipped was absurd: scarcely 30 degrees. The whole surface had been remoulded by the wind and only a few large blocks on a shelf two or three hundred yards below us bore witness to the slide. The crust and powder snow forced us to great efforts and our fears became vocal again. A bridge over a huge crevasse cracked under my weight. During the halt half-way up, the sleet rattled on our hoods. Would we never get good conditions? The air was icy and Madame Kogan asked me to rub her chilled back. In a very respectful voice, Gyaldzen enquired: "Has she got fleas?" An enormous shout of laughter warmed us and made us optimistic, and I resumed the track with enthusiasm despite the fog and a foot of powder snow. Rather luckily we found a few flags again and reached 21,000 ft. The altimeter and the relief showed us that we were near the camp, but the tents were invisible. "Up there!" No, that

was a block of ice. "Down there!" No, another piece of sérac. All these blocks were strange; we did not remember them. Anxiety overtook us and we had presentiments of something unpleasant. There it was, in a gap in the fog: an enormous ridge of séracs had fallen from the flanks of the summit and Camp III had disappeared beneath it. This was too much for our nerves; each of us held his companion, his friend, responsible for this avalanche which could have crushed us like mice. A terrible and idiotic piece of abuse that was quickly forgiven.

With an air that I hoped was calm, I dug a terrace at the side of the ice debris. The Sherpas found this natural and willingly helped. But when Pierre asked them who would like to spend the night with us, Pemba Norbu was the only one not to make a wry face. With him we made a crowded foursome under the low roof of a tent for two. It was warm, but how thirsty we were! Over a candle, a little snow was melted. We sucked frozen fruit juice, and sugar which would not dissolve on our dry tongues. And to think that fifty yards away were two stoves and all sorts of nice things, as well as three of our cameras!

At last came August 28th, calm and radiant. A perfect day for the summit. A straight line would take us there by the snow-covered south-west face. But after our experience of avalanches, the smooth slopes had lost their charm. Leaving at 7.40 a. m., in powder snow where the ski-sticks were useful once more, we came to a rib which marked the bottom of the face on the right. This rib was easy, but towards 21,500 ft. it vanished into the summit slopes. Bernard Pierre, with his faithful Pemba, succeeded in ascending that far. But after the snow slide that had bruised his chest wall and rendered recent days painful, his resistance was undermined and he suffered from the cold. We saw him turn back with heavy hearts, he who had made the expedition possible and had directed it till the last morning.

500 ft. higher, the smooth slope was broken by two rocks. It was necessary first of all to reach these, wallowing in wind-crust that lay above bottomless powder snow. This kind of drudgery would not have displeased me too much if the haunting memory of the avalanche was not running round and round my head. When at last we were seated on this rocky perch, we could breathe again, for there there was no danger. But further on? Madame Kogan took the lead and climbed straight up to avoid cutting the slopes; soon she encountered great bands of windblown snow which rose obliquely leftwards towards the west ridge. Fearing that these sheets of snow would not support our weight, we followed their lower edge in a traverse that became more and more horizontal. It was a slow and delicate advance on a fragile staircase. Towards the end the slope rose up at 55 degrees, but the snow was firmer and my companion succeeded in planting her ice-axe into the crest at about 22,300 ft.

Having rested, we started off again at 1 p. m. in calm weather, although the mists gradually enclosed us. The completely snow-covered ridge was unstable; decayed snow to the right, powdery and unsteady on the left. Sure now of reaching the summit, we climbed at a good pace. But above 23,000 ft. the crest steepened and I came upon a succession of bosses without stability: snowdrifts through which we had to cut a veritable trench. Fortunately, my comrade was in great form and we could relieve one another from bosse to bosse for this exhausting labour. During the minutes of waiting I marvelled at the technique and the will of this woman, a fragile figure in her outfit of sky-blue nylon. The last snowdrift formed an advance summit. Three further rope-lengths, almost horizontal, a rock turret, and then arm in arm we followed the little snow crest beyond which there was nothing but the mists.

Having reached the summit at 2.50 p. m. we left it half an hour later. We quickly tumbled down the ridge, but the face seemed to us even more treacherous than in the morning. We descended it with infinite precaution, so as to break and to shake nothing. Then a short trot brought us to Camp III, where we fell into Bernard's arms and Pemba's saucepan. The Sherpas had brought the necessities up from Camp II and we spent a long and happy night, tirelessly supplied with drinks by our dear Bernard.

On the 29th the upper camps were evacuated and on August 31st we began the return march. At Naopachi, instead of descending southwards by the road we knew, we ascended north-west in order to cross a pass (the Margan Pass, 11,600 ft.) and enter the great valley of Srinagar. And already the passion had seized us again and we were dreaming of another mountain, higher still and further away.

NANGA PARBAT—AN HISTORICAL SURVEY

By G.O. Dyhrenfurth

1895: The very first expedition consisted of A. F. Mummery, G. Hastings and J. Norman Collie, and for a short time, C. G. Bruce. First of all the South Face was studied from the Rupal Valley; this was a huge wall nearly 15,000 ft. in height. The Mazeno Pass, 17,580 ft., six miles west of the main summit, was crossed and a base camp established in the Diamir Valley. From here Mummery launched his attack first with two and then with one Gurkha. He ascended in direct line under the summit and reached a height of about 20,000 ft. on a steep rock rib, but owing to the fact that he had no build-up behind him, he was forced to retreat much against his will.

In spite of this disappointment, it was decided to make a reconnaissance of the north side of the massif. The majority of the expedition members now went over three small passes into the Rakhiot Valley on the Chilas side. Mummery wished to get there by means of the Diama Pass (20, 350 ft.) on the north arête of the mountain with his two Gurkhas. They started off on August 24th, 1895, and none of them was ever seen again. The expedition members waited for them in vain in the Rakhiot Valley, but all further search proved fruitless. In all probability, Mummery and his two companions were carried away by an avalanche.

The unsolved mystery of the tragic end of this great English mountaineer caused as much sensation in its day as did the disappearance of Mallory and Irvine on Everest, nearly three decades later.

1932: Willy Merkl undertook to lead the German-American Himalayan Expedition in 1932, in place of W. Welzenbach, who was prevented by business reasons. The following took part: Peter Aschenbrenner, Fritz Bechtold, Fritz Wiessner and the young American, Rand Herron. On the march out, no inhabited villages were encountered after leaving Astor, so that the expedition was forced to cross into the Rakhiot Valley over three intervening ridges. Base Camp was not established until thirty-seven days after leaving Srinagar, on June 24th at 13,000 ft. They had one piece of bad luck; ten boxes containing almost all the porters' equipment were stolen. Another snag was that the expedition had no Sherpas with it.

Camp I was placed at about 14,660 ft., at the foot of the North-East face, Camp II near a spur of rock on the glacier at 17,550 ft. and Camp III in an ice grotto at about 19,400 ft. The highly crevassed and most dangerous part of the Rakhiot Glacier was now behind them, and Camp IV was sited at 20,180 ft., on the wide glacier terrace close to the North-East ridge. After a preliminary ascent of Chongra South Peak (21,155 ft.) and Rakhiot Peak (23,200 ft.) Merkl decided to launch his attack in the West névé basin, through the so-called "trough" (Mulde), in spite of its great steepness and exposure to avalanches. Although the first heavy monsoon snowfalls made this ascent extremely troublesome and risky, Camp VII was set up at 22,800 ft., on the arête West of Rakhiot Peak on July 30th. But it was too late, and all further attempts foundered in deep new snow. At the end of August they had had enough, but Merkl was convinced that the right route had been found.

1934: It was only natural that Merkl wanted to complete the task he had begun as quickly as possible. Thanks to the very generous financial help provided by the Sports Association of the German State Railways, a huge expedition was got together. It included nine climbers, a Base Camp supervisor, three scientists, two transport officers, and thirty-five of the best Sherpas and five hundred porters!

The first four camps were quickly established—more or less at the same spots as in 1932. Then came a tragic event: Alfred Drexl died at Camp II on June 8th following an attack of acute pneumonia. All the climbers and porters were recalled to Base Camp, where Drexl was buried on June 11th. There was another hold-up on the organising side; tsampa (barley) for the Sherpas had run out. In this way eleven wonderful, clear and windless days were lost. Not until June 22nd was the party able to start out again and Camp IV (20,290 ft.), Advanced Base Camp, was re-occupied on June 25th. Seventeen days had been irretrieveably lost, and even then the expedition took its time. The real attack did not start until July 4th from Camp V (21,950 ft.), below the steep face of Rakhiot Peak. This was badly organised, as too many climbers participated at the same time, necessitating the employment of too much equipment and too many porters. On July 5th a new camp, No. VII, was established at 23,125 ft. on the "Schaumrollengrat", and on July 6th, Peter Aschenbrenner and Erwin Schneider cut steps up to the "Silbersattel". Early next morning the leading group was up, and after waiting for two hours in vain, went on over the névé to just below the first summit, about 25,760 ft. The rest of the party had, however, pitched Camp VIII at 24,530 ft., near the "Silbersattel". Schneider and Aschenbrenner could have probably got to the top that day, if they had liked, but they did not want to steal a march on their comrades. The next day they intended to climb the first 8000-m. peak all together.

However, at this very moment, during the night of July 6th/7th, heavy monsoon snowstorms started. After a bad day and an even worse second night, the retreat was sounded on the morning of July 8th. At the request of the leader, Schneider and Aschenbrenner undertook to find the route through deep snow and the rest of the party were to close up behind. And the Tyrol lads did it. By 7 p. m. they were at Camp IV, in the firm belief that the rest of their party—three sahibs and eleven Sherpas—were following close behind. It was impossible to see anything and equally impossible to wait in the raging snowstorm. Only five Sherpas were saved, all with severe frostbite, and of the Germans, Uli Wieland, Willo Welzenbach and Willy Merkl perished, together with six brave high level porters. It was a catastrophe of first magnitude. All rescue attempts from Camp IV were smothered in deep new snow.

1937: Now Paul Bauer took up the cudgels against Nanga Parbat with the assistance of the newly formed German Himalayan Foundation. The first of Nanga Parbat expeditions inspired by him took place under the leadership of his friend Karl Wien. There were seven climbers, mostly from Munich, and two scientists, the doctor U. Luft and the geographer C. Troll. Schneider and Aschenbrenner did not go.

On June 11th Camp IV was established, somewhat to the West of that of 1934, in a basin closer to Rakhiot Peak. The ferrying of loads to Camp V was started on June 14th, which was to be occupied by some of the party the next day. During the night of June 14th/15th, therefore, Camp IV was unusually full, seven Sahibs, i. e. the whole of the climbing party, and nine Sherpas. A few minutes after midnight an avalanche descended from the icefall of the Rakhiot Peak burying the camp and its occupants. This was not noticed until a few days later when U. Luft was on his way up from Base Camp. A small party under the leadership of P. Bauer which had flown out to India, was able to dig out part of the buried camp and rescue diaries and some personal effects. Much has since been written about this tragedy, but it has never been brought to light why Advanced Base Camp was placed in the basin immediately below the icefall of Rakhiot Peak.

1938: A new team, under the leadership of Paul Bauer in person, went out a year later. A three-engined Junkers aircraft, stationed in Srinagar, was used for transporting the loads. Once again an expedition appeared to possess all the trump cards, and once again the mountain won! This time the expedition was held up by continuous bad weather and most unfavourable snow conditions. Time and again they were driven down to Base Camp by heavy falls of snow, and it was not until July 22nd that the site of Camp VI (1934) was reached. On the "Mohrenkopf" (Moor's Head) the bodies of Merkl and his porter Gyali were found, in a good state of preservation. They were buried there. Several attempts

to reach the "Silbersattel" (25,240 ft.) failed owing to the impossible conditions. Bauer was forced, therefore, to call a retreat, but at least there was no loss of life this time. Finally the summit of Nanga Parbat was flown over by some members of the expedition and photographed from all sides.

1939 : For some time doubt had been growing as to whether the route followed since 1932 from the Rakhiot Valley was the only possible access to the peak. The old direct "Mummery Route" on the Diamir side began once again to arouse interest, and it was decided to explore it thoroughly. A small expedition, including Peter Aufschnaiter and Heinrich Harrer, was entrusted with this task. It was found, however, that the Mummery Route was extremely prone to avalanches, so the rock rib lying to its north-east was examined and a height of about 20,000 ft. was reached on the "Middle Rib", just below the North Summit 1. Here also there was much danger from avalanches and stonefall. Not only the technical difficulties, but also the objective dangers inherent on this route, were so great that it was in no wise to be preferred to the "Normal Route". On the way home war broke out and the two friends were interned in India; their subsequent adventurous escape to Tibet and their many years' sojourn in Lhasa are well known.

1950 : Three Englishmen wished to explore in the North Karakorum but could not get the necessary permission from the Pakistan government at the last moment and decided to undertake a winter exploration of Nanga Parbat, although they were not equipped for it in any way. They took four Sherpas, among whom was the most famous one of all, the celebrated Tensing. Base Camp was set up on November 11th, and the next day Camp I at the same spot as the Germans had always camped. Naturally enough, the Sherpas were not very enthusiastic about this winter expedition and Tensing's warnings were completely ignored. The three Sahibs went on alone, carrying everything themselves. On November 18th R. H. Marsh returned alone to Base Camp suffering from frostbite, but J. W. Thornley and W. H. Crace continued up the Rakhiot Glacier. After December 2nd they were never seen again and air reconnaissances could find no trace of them.

One cannot but admire the courage of these men, but it was the audacity of outsiders who had no idea of what a winter expedition to Nanga Parbat involved.

Up to the present time, Diamir the "King of Mountains" has claimed thirty-one victims, fourteen Europeans and seventeen natives.

It was not until 1953 that the mountain was finally conquered.

Plate 19 : The "Mohrenkopf" (Moor's Head) with the memorial tablet to Willy Merkl, Willo Welzenbach and Uli Wieland, who perished on the east ridge of Nanga Parbat in 1934.

Plate 20 : Equipment parade for the Hunza porters at Base Camp.

Double-plate 21/22 : Negotiations with the Moslems from Tato about carrying loads up to Base Camp.

NANGA PARBAT

By Karl M. Herrligkoffer

For a long time all expeditions to the fourteen highest mountains in the world had regarded the difficulties solely in the light of technical climbing problems. The alpine aspect was taken too much into account until 1952 when the biological problems assumed their rightful place over and above those of the alpine, technical, and human side. Naturally the purely technical aspect must always remain well in the foreground but the most urgent of all remains the effect of altitude on the human organs. In proportion to the reduced atmospheric pressure at great heights and consequent lack of oxygen, the degree of efficiency of the human body rapidly decreases. At 8000 m. (26,245 ft.) breathing without the aid of oxygen is almost intolerable and all bodily or even mental effort can only be achieved by the application of extreme will power. Owing to the very considerable reduction of all physiological effort, as brought about by lack of oxygen, it is but a small step from a state of complete lethargy or sonambulism to that of death.

The results of Dr. Ed. Wyss-Dunant's experiments have greatly increased our knowledge of Himalayan mountaineering. The knowledge that man cannot recuperate above 23,000 ft. and can only remain for a few days at the most above 25,500 ft., without actual danger to life, was a turning point in the history of the Himalayas.

The difficulties which the Nanga Parbat Expedition of 1953 had to face seemed almost insuperable. Even permission to travel through Pakistan only turned up at the last moment, and everyone breathed a sigh of relief when at last the party left Munich for Genoa on April 17th 1953.

The expedition members were as follows: Fritz Aumann from Munich, head of camp administration, radio communications and photography. Peter Aschenbrenner from Kufstein, having considerable Himalayan experience, was leader

Plate 23: Fixed ropes on the Rakiot face. The rock tower of the "Mohrenkopf" is just visible behind the cornices of the east ridge. Beyond are the south face and summit of Nanga Parbat, the latter being separated from the lower summit by the Bazhin Gap.

Plate 24: Coming off the Rakiot traverse to the "Mohrenkopf" on the east ridge. Above is the Silbersattel over which the névé plateau is reached which leads via the lower summit and Bazhin Gap to the summit pyramid of Nanga Parbat.

of the climbing party and followed on by air as business reasons prevented him from travelling with the main party. Albert Bitterling, guide, from Berchtesgaden, was also the meteorological expert of the party. The two friends Hermann Buhl and Kuno Rainer from Innsbruck, were well known for their winter climbs and also the ascent of the north face of the Eiger, north face of the West Zinne and a complete traverse of all the Chamonix Aiguilles. Hans Ertl, the well-known climber and camera man, came from Bolivia to join the expedition. Dr. Walter Frauenberger from St. Johann was deputy leader, and Dr. Karl M. Herrligkoffer was leader of the expedition and its medical officer. There were, in addition, two junior members with Himalayan experience, Otto Kempter and Hermann Köllensperger, both twenty-seven years of age.

We reached Karachi on April 30th, after a fine voyage on M. V. "Viktoria" of the Lloyd-Trestino line. Thanks to the good offices of the German Embassy, we obtained extremely favourable customs concessions, which in future will apply to all expeditions travelling to Pakistan. All the equipment was loaded up by May 2nd and was dispatched by rail to Rawalpindi. The personnel followed in three separate parties, as it was not possible to travel all together owing to lack of space and in any event somebody had to stay behind to collect the few remaining boxes.

We came in for the tag end of a week's heat wave in Rawalpindi. We managed to get permission to continue the journey by air and also received the assurance that the U. N. Radio Station of Rawalpindi would provide a daily weather report for the duration of the expedition. The second group arrived on May 5th with the baggage.

The first two aircraft started off next morning at 5 a. m., and two more Dakotas followed at 10 a. m. with the remainder of the party and the baggage. We all sat hunched up in the aluminium shell of the aircraft and looked out spellbound on the sea of peaks below. The whole of the interior was crammed with sacks and boxes. After about half an hour's flight the mountains began to assume larger proportions and the first 5000 m. (16,555 ft.) peaks made their appearance, and then suddenly, through a momentary gap in the clouds, we could see Nanga Parbat, a white glistening mass, indescribably high. The planes flew at about 18,000 ft. above all the nearby summits, overtopped by the snow and ice giant reigning supreme over all others. We could see that it constituted a corner stone of the enormous Himalayan chain. The Indus Valley was seen to the west, from which the mountain must be clearly visible.

We could not keep our fascinated eyes off the mountain and tried to compare it with photographs of previous expeditions. Gradually we were able to orientate ourselves. The Diamir face, its icefalls covered with snow, sparkled in the sunshine in quite an incredible manner, but from time to time the tremendous

hanging glaciers and the ridges were concealed by drifting cloud banks. The Barbusar Pass was well covered with deep new powder snow and to cross it would certainly take several valuable days.

We began to go down to the valley of the Indus and after a swing to the right the route along which the columns of porters would shortly be marching became visible. The Rakiot bridge could be seen; also the moraine, covered in fresh snow, and the Rakiot Glacier, itself deeply buried. We glided in to land at Gilgit.

Our reception, which was of a ceremonial nature, was a bright affair, the pipers of the Gilgit Scouts in their white and green uniforms playing us in with drums as well. All the expedition members were decorated with a wreath of roses round the neck and at the end we looked rather like a herd of prize cattle. The Mir of Hunza had sent along seventeen high altitude porters; they were fine fellows and made an excellent impression. The porter situation was causing us no little worry, for our five Sherpas and their sirdar, Pasang Dawa Lama, were not able to join us and had to return.

The climbers were conducted to their bungalows and after the hot days in the desert of Sindh all were glad to have reached cooler and greener pastures, in the immediate vicinity of the Himalayas. This region is very similar to that of our Alps and the garden of the bungalow could very well have been in Tyrol or Bavaria. The people also are akin to the Tyrolese and we all felt very happy from the first moment of arrival.

On May 8th the first party with Frauenberger, Buhl and Aumann, left the friendly town of Gilgit in jeeps for Talichi in the Indus Valley. Although much was expected from rapid transport by jeep, we soon had cause to realise that even in the year of grace 1953, horses and donkeys were not to be despised, for during the night four of our five jeeps broke down. On May 10th, therefore, a caravan of about 30 donkeys carrying 120 loads, and later on a still greater caravan of horses, set out for Talichi. This was the first expedition in Pakistan and without the assistance of the government would have been impossible.

After a breakneck ride on a jeep along a very narrow road hewn out of the solid rock, round a thousand bends and under enormous rock overhangs alongside the Gilgit, and later on the Indus, we eventually arrived safe and sound at our bungalow in Talichi. We at once began the task of weighing and distributing the loads among the mountain peasants who act as coolies and whose job it was to transport our boxes and sacks via the Rakiot bridge to the temporary Base Camp.

On May 11th Frauenberger and Buhl with eight Hunzas went ahead to the Rakiot bridge and next day established the temporary Base Camp at about 12,250 ft. All loads had had to be reduced to units of 50 English pounds in Talichi and through our liaison officer, Tassildare, we were able to fix the porters rate of pay at 25 rupees per trip.

The old caravan route from Talichi to the Rakiot bridge is interrupted by a mountain torrent, and all loads have to be carried on the porters' backs as far as the bridge, a distance of about 2½ hours. On the way we kept meeting returning porters who had dumped their loads at the camp and were on the way back to Talichi for more. In all, we employed 263 porters who carried 500 loads between them. Next day more loads arrived from Gilgit and the same procedure was repeated.

On May 13th the last sahibs crossed the Rakiot bridge and now began the ascent from the Indus Valley over a wild and boulder-strewn slope entirely devoid of vegetation or signs of life. It was not until we had reached a height of about 8000 ft. that we saw a few plants, chiefly rosemary.

Owing to the great heat we started off very early next morning on a foot track in the Rakiot Valley, which is so narrow that the natives are obliged to grow their grain on small terraces bounded by stone walls. The inhabitants of Tato and the surrounding district are dark-skinned, the men wear moustaches and the women, with their bright trousers and jackets and hats decorated with brass rings, look like Indians.

The track led steeply upwards through firs, pines and tuja trees and two hours later we reached the long awaited "fairy meadow". This is somewhat less romantically called "marshy meadow" by the natives. Ascending slightly through a forest of fir trees we came to a clearing, traversed by a glacier stream. Here everything was green and this spot, at about 10,000 ft. above sea level, reminded us of our Western Alps. Frauenberger and Buhl had pitched the camp at 12,100 ft. two days before and all our loads were first of all put into a large tent. Then Aumann started to hand out equipment to the Hunzas. There was great jubilation over the bright-coloured pullovers and anoraks, but it was the ice axes that really took their fancy. They were really proud of them and would not let them out of their sight.

Coolies, in the former sense of the word, do not exist in Pakistan today. The mountain peasants only work for an expedition when they receive an order to do so through the medium of their "Political Agent". It is, however, very different where the Hunzas are concerned. They came from their village in the Hunza Valley in order to join the Nanga Parbat Expedition. As Moslems they are subject to the same religious principles as the other porters, but as they wished to go along with us, they had to obtain exemption from their priests for the period of the fast.

Our first Sunday in our temporary Base Camp was not exactly propitious, for it rained or snowed without intermission. However, when a porter came up from Tato and reported that a Sahib had arrived in the village below, our spirits rose immeasurably. In about a quarter of an hour this Sahib arrived—it was Peter

Aschenbrenner. We were delighted to see him, all the more so when it transpired that he had mail with him, mail from home!

Peter Aschenbrenner's arrival acted like a breath of fresh air. His great experience of expeditions enabled him to organise everything in the very best manner. He at once had another large tent put up, allotted "orderlies" and rearranged the loads for carrying to the permanent Base Camp. The last instalment of porters' wages was distributed and each one received a dose of Corodenin eye drops as a protection against ultraviolet rays before starting off for the Base Camp.

On May 18th the porters set off with their two hundred loads, and on May 23rd all the Hunza porters had to do two journeys from the temporary Base Camp over the moraines of the Rakiot Glacier to the Base Camp. As they refused to do this at first, I promised them each a tot of brandy. As soon as they got back to camp from their first carry, they seized their second loads, swallowed their chapatis to the accompaniment of much shouting and, after a few hours' rest, evacuated the temporary Base Camp for the last time. At last, on Whit Sunday, May 24th, everybody was installed with all goods and chattels in Base Camp at the foot of the great moraine.

Acclimatisation and First Assault

On the afternoon of May 26th, Kempter, Köllensperger and Aschenbrenner made a track up to Camp I, followed by nine porters, and a little later Rainer and Buhl also went up. Peter Aschenbrenner had sited Camp I behind a large rock which gave some sort of protection against ice avalanches falling from the north-east face. Rainer and Buhl advanced further on May 28th, to the spot where Camp II was to be placed at about 17,400 ft. They started at 3.30 a. m. through the icefall, but the snow cover was in such a bad state that they kept continually breaking through. By midday they were so exhausted that they were obliged to take an hour's rest in the blazing sun, about 1300 ft. below the site for the camp, before they could summon up enough energy to return to Camp I.

In two days time the reconnaissance was continued, and Rainer and Buhl were reinforced by Kempter and Köllensperger. Good progress was made and by 9 a. m., the four men had a rest under "Vajolet Towers". These are séracs, 270 ft. high, near where Camp II was to be placed. Led by Kuno Rainer, the party reached the site of Camp II and got back to Camp I at 4 p. m. in a fairly exhausted state.

The boxes for Camp III were already en route to Camp I. Walter Frauenberger was making a good job of this preparatory work. Next day six Hunzas carried up the first loads to Camp II, Rainer and Köllensperger remaining there while Frauenberger led the porters back to Camp I. The route through the icefall had

now to be made safe for the porters with rope ladders and fixed ropes. All this time the advanced party was in radio communication with Base Camp by means of the walkie-talkie apparatus; thus the forward party was able to make known its needs to Base Camp at all times.

On June 3rd Albert Bitterling took charge of Camp I and early on went up to Camp II with Hermann Buhl and eight Hunzas. While crossing "Winter Alley", they accidentally started off an avalanche and were swept down about 100 ft. Porters and loads were tossed about all over the place, but without any harm being done. The porters, however, had suffered a severe shock and it took several days before their confidence was fully restored.

Wishing to make things more homely for the porters at Camp I, Aumann put up a large mess tent, so that by June 5th all the porters were together in this tent, 150 ft. distant from the other tents.

Buhl and Köllensperger went up to Camp II on June 6th with six heavily laden porters who remained there awaiting the arrival of Rainer and Kempter. These two had gone up to about 19,700 ft. to find a suitable emplacement for the third camp. The next day Buhl brought up twelve porters to Camp II and was back in Camp I by 11 a. m., while Frauenberger, Kempter and Köllensperger, who had settled in at Camp II, improved the track to Camp III.

In order to speed up the ferrying of loads I put in twenty Tato men to bring all the boxes for the high camps up to Camp I. We now had to accelerate the ferry service up the Rakiot icefall to Camp II and beyond to Camp III at 20,170 ft., the advance base for the first assault on the summit. Rhabar Hassan was therefore sent back to Gilgit to recruit another twelve Hunza porters, of whom, subsequently, only about a third proved suitable for the upper camps.

On June 9th Albert Bitterling and Hermann Buhl went up from Camp I through the Rakiot icefall to Camp II with twelve porters. Next day we had a surprise visit at Base Camp; Rott from Augsburg, a Nanga Parbat enthusiast, arrived and remained for a week as our welcome guest.

Peter Aschenbrenner got things moving early on June 11th. We intended to make an immediate advance to the east arête in view of the excellent weather conditions prevailing, and we went through the plan of attack very carefully point by point. Rainer and Kempter were literally hounded out of bed in Base Camp by Peter Aschenbrenner, still half asleep and not knowing whether they were coming or going! They were instructed to start going up higher as soon as possible.

On the same day Frauenberger and Buhl reached the upper terrace of the Rakiot Glacier and pitched their tent at 20,350 ft. After a short visit to South Chongra Peak, 21,150 ft., they made a track to the proposed site of Camp IV under the Rakiot ice wall. This site corresponds to the Camp V of former

expeditions and Camp III (at 20,350 ft.) to that of former Camp IV, for owing to shortage of porters we had to forego the Camp III of former years (19,320 ft.). While Frauenberger and Buhl were advancing towards Rakiot Peak, 3000 ft. lower down, Ertl, Rainer and Kempter were getting comfortably installed in Camp II, at 17,400 ft., among the séracs.

During the night 12/13th June about 20 inches of new snow had fallen and the following day thick clouds began to mass over the Indus Valley and approached the north-east face of the mountain. Between the snow showers the sun burned down with great intensity, making the atmosphere like that in a hothouse. Aumann, Bitterling and I were in Camp I. Bitterling with a remarkable sense of duty had just accomplished his thirty-second trip through the icefall between Camps I and II, with the often difficult Hunza porters.

On June 14th there was snow without stopping and it was not until next day that it was possible to resume communication between Camps I and II. In Camp II they were impatiently waiting for the arrival of the indispensable porters' stores, in particular, chapatis and ghi. Rainer and Köllensperger tried to get from Camp II to Camp III in knee-deep fresh powder snow, while Aschenbrenner and Ertl compacted the snow in "Winter Alley" by treading it down. After ten hours of bitter struggle through snow often breast-high, Aumann and Bitterling with seven Hunza porters made a new route through the Rakiot icefall. On their way back they were surprised by an enormous ice avalanche from the north-east face of Nanga Parbat and covered with a thick coating of ice particles. Eventually they got back to Camp I, very late at night and totally exhausted.

June 16th was a wonderful day, and in Camp I everybody was up and doing from a very early hour. But the porter column was not ready to start until 5 a. m. They reached Camp II under the leadership of Fritz Aumann at 11 a. m. Aschenbrenner, Rainer and Kempter went up to Camp III (20,170 ft.); a few hundred yards below the camp the wind was sweeping the snow across the slopes. It was clear but bitterly cold; eventually they reached the camp about 10.30 a. m., to find all the tents full of drifted snow which had to be dug out. Köllensperger returned with the six Hunza porters to Camp II at about midday. A strong wind sprung up late in the afternoon and a snow plume became visible on the Rakiot ridge.

June 17th. Another lovely day. Bitterling came up to Camp II with the news of the English victory on Mount Everest. We were very pleased and also considerably impressed.

At sunset Camp II, with its huge ice and snow guardians, was a very fine sight. The long evening shadows stretched out over the glacier but, before the penetrating cold made us seek the shelter of the tents, we had a last look at the wonderful panorama spread out before us: Buldar Peak (18,370 ft.), then the

three 20,000-ft. summits of the Chongra Peaks group and, lying to the east, the Rakiot Peak (22,195 ft.), with a long ice ridge leading up to the south-east summit (24,700 ft.) adjoining the Silbersattel.

The same day Ertl and Köllensperger went up to Camp III with five Hunzas, where they found Peter Aschenbrenner in the act of siting the camp some 150 ft. lower down, where it would be less exposed to the wind.

June 18th. A change in the weather was threatened, for the sun was hidden in the east behind a layer of red mist over the Chongra Peak massif. At 4.30 a. m. twelve porters followed Ertl, Aumann and Köllensperger, carrying heavy loads up to Camp III, and a little later, Frauenberger, Rainer, Buhl and Kempter left Camp III to find a tent site for the last outpost below the east ridge. They dug a hole in the snow large enough to hold four men at the spot where Camp V of previous expeditions was situated.

June 19th. I went up to Camp III with Aumann and five laden Hunzas. As we got there and were warmly welcomed by Aschenbrenner, Ertl and Frauenberger, Buhl, Köllensperger and Kempter were traversing across to Camp IV with four Hunzas. They pitched a bivouac tent, half dug into the slope. They slept in the ice cave which gave them good protection against the wind and driving snow, but were much troubled by an icy draught coming from a crevasse which penetrated the cavern. Köllensperger went back to Camp III with the porters, arriving there at 2 p. m., while Buhl and Kempter remained at IV in order to deal with the Rakiot ice wall next day. Kuno Rainer had caught a chill while digging out the ice hole at Camp IV and had fever. Fortunately this disappeared but must have left an infection which had settled in his right leg, for after examination I diagnosed acute phlebitis, which kept him in the tent instead of making an attack on the summit.

June 20th. Marvellous weather, "summit weather" according to Aschenbrenner, who was with me at Camp III. Köllensperger and Rainer went up to IV, accompanied by Ertl, who came back again the same evening. Seven heavily laden porters followed up. I found Buhl and Kempter making the lower part of the Rakiot ice wall secure. Later on, Otto Kempter reported as follows:

"The traverse from the Rakiot Gap to the ridge was ice for the first 50 ft. Buhl slowly cut a row of steps across, then we turned up to the left to Rakiot Peak. After a rest on the summit (22,860 ft.) we went along the east ridge and ascended to the Mohrenkopf (Moor's Head). We left a shovel there so as to be able to dig a cave later on. It was 3.30 p. m., so we turned back to Camp IV. It is a curious thing, we are on that part of the route that Willy Merkl was never able to do."

June 22nd. Minus 14° C. in the tent and snow all the time. In spite of the 20 in. of new snow, Frauenberger got up to Camp III with four porters. Buhl

decided to take a load up to the Rakiot shoulder from Camp IV; he came back in four and a half hours. Rainer tried to go down to Camp III in the afternoon but was forced to return, as he felt too weak to get to the camp alone.

June 23rd. Snowing all day. Rainer and Köllensperger went down from Camp IV to Camp III. Kuno had overtaxed his strength. Later Buhl also went down to III to get fuel. Kempter was thus left alone at IV and spent the entire afternoon shovelling snow, and was rather disturbed at his general weakness.

The same day Bitterling aroused Base Camp by a call for reinforcements to make a track through the Rakiot icefall. Aumann came to Camp I and found to his great annoyance that the large tent, which he had had erected with such loving care, had been removed by an avalanche 150 ft. further down the slope.

June 24th. Very fine. Through my field glasses I could see Frauenberger and two porters on his way up to Camp III, and Hermann Buhl also on his way up to IV with two heavily laden Hunzas; he was taking petrol to the Rakiot camp. Kempter now went down to Camp III to recuperate and the same day Aumann and Bitterling with seven porters made a track through the icefall to Camp II, under most difficult snow conditions. This took them seven very hot hours.

June 25th. Still fine, but the barometer was falling, and clouds began to form in the east over the Chongra massif. Very early, Kuno Rainer, Köllensperger and three porters went down to Camp IV. Kuno still felt very weak and went down the same day to II. Buhl came down with his seven porters from IV; he had worked himself up into such a state over them that he just could not stay up any longer. Bitterling, who had just come up, stayed in Camp III and brought a report that the monsoon was expected in Rawalpindi about June 28th. We had no time to lose.

June 26th. Fine but cloudy. Aschenbrenner, Ertl and Bitterling with six porters ascended to Camp IV. Aschenbrenner returned the same day to III, while the other two remained for a night at IV. Frauenberger went up to Camp III with some porters, meeting Buhl and Köllensperger there. Rainer felt really ill and went down to Camp I.

June 27th. Very cloudy. Snow laden monsoon clouds have reached the Nanga Parbat area. In spite of this, Frauenberger, Buhl, Kempter and Köllensperger started off. Buhl was suffering from altitude so Kempter led the whole way to Camp IV. There they met Bitterling and Ertl, who left for III during the afternoon. The weather cleared up a little in the evening. Rainer had reached the end of his tether and had to go down to Base Camp.

June 28th. Extract from Kempter's diary:

"Started at 11.30 a. m. for Camp IV, carrying loads. It was a very tiring and slow trip up the Rakiot face. Buhl was not in good condition, so did not carry a load. The traverse to the Mohrenkopf was very difficult, Köllensperger slipped

and fell about 30 ft. down the slope, but was held on the rope by Buhl. It began to snow again and the time was already 5.30 p. m. I began to realise that it was most unwise to go on and, after a short discussion, we turned back to Camp IV. My suggestion of leaving the loads at the Rakiot Gap was overruled, as the general opinion was that we would never get up there again. We all got back safely to Camp IV at nightfall, fairly exhausted."

So ended the first assault on the summit of Nanga Parbat. It was now knee deep in new snow.

The same day Peter Aschenbrenner arrived in Base Camp with some sick porters. When he agreed to join the expedition some six months earlier, he made it a condition that he could follow the main party by air and also that he must start for home again on July 1st at the latest.

Second Assault on the Summit

On June 29th the situation on the mountain was as follows: The porters would not go above the Rakiot ice wall, in other words above Camp IV. The leading party of Buhl and Kempter was very tired; finally, the mountain was buried deep in snow. Buhl, however, wanted to have some kind of a success for the sake of prestige, either an ascent to the Silbersattel or to the lower summit. Kuno Rainer was still suffering from phlebitis and was at Base Camp. Frauenberger was on the whole in good form, if somewhat exhausted, and most of the porters were in need of recuperation. All the camps were fairly well stocked with food, but the teams would have to have a good rest at Base Camp before setting out on another assault. A new plan was got ready, Camp I reconstructed and the loads rechecked. A large new tent was added, and tree trunks obtained and made into ladders so that the ever widening crevasses below Camp II could be crossed with greater ease. Porters were recruited from the Isa Khan group at Base Camp and for a special fee promised to carry loads up the Rakiot ice wall to the Mohrenkopf.

The team at Camp II had agreed to the proposed withdrawal and was to come down the next day, June 30th. Suddenly, without warning, the weather completely changed, all the monsoon clouds disappeared and a fine starry night betokened a fine day to follow. Humidity sank to 50% and in the course of the next day went down to about 25%. A fine weather period of thirteen days had begun.

The following extract from the deputy leader of the expedition Dr. Frauenberger gives a description of the successful attempt on the summit:

" June 30th. Hermann Köllensperger went down to Base Camp as he was at the end of his tether after the first attempt. Orders received from Base Camp for

all to come down as the monsoon had arrived and everybody needed 'Base Camp recuperation'. As the weather cleared up about midday, Ertl, Buhl, Kempter and I decided to wait and see what the next few days would bring forth. After a talk over the radio with Base, we finally convinced them that we were still in excellent form and, provided the weather remained fair, an immediate attack on the summit might be successful. Our spirits were very high, partly owing to the magnificent behaviour of the weather and partly because we had brought Base Camp round to our opinion.

"July 1st. Perfect weather. We went up to Camp IV with the three best Hunzas, leaving Otto Kempter to follow tomorrow with the Hunza sirdar, Madi. We were in constant communication with Base during the ascent to Camp IV by means of our walkie-talkie set. Once at Camp IV, I took the Hunzas in hand, adjusted their crampons, made tea for them and talked to all of them so that they should have complete confidence in us, for tomorrow would be decisive; if we could get them up the Rakiot wall, then an assault on the summit would be possible; if not, then we must consider ourselves defeated.

"July 2nd. Still perfect weather. I was glad to see the Hunzas getting ready to make an early start. Kempter arrived from Camp III with Madi, the fourth Hunza, just at the right moment. I roped up all the Hunzas behind me and we got to the Rakiot shoulder in surprisingly good time; if these people are properly handled, they will do anything. Ali Mahad, the best of the four, Hadji Beg and Hidayat Khan traversed the ice slope of the Rakiot Peak to the Mohrenkopf, just beyond which we established Camp V in a deep notch in the arête. At sunset we took the porters back to IV.

"July 3rd. High wind howled round the tent all night. I was uneasy about the weather and our plan until Hermann Ertl, our early riser, reassured me at 6 a. m. by saying that he had seen Hermann Buhl and Otto Kempter well on the way up. By 7 a. m. Buhl had disappeared behind the Silbersattel and at 7.45 a. m. Kempter had also reached this spot.

"That evening all the Hunzas reported 'bimar' (sick) and would only promise to get up as far as Camp V the next day. During the afternoon I went up alone to V in order to get into touch with the summit assault party and sat for a considerable time on the Rakiot shoulder, until later in the evening I saw a single figure coming down from the Silbersattel. Where was the other one?"

So much for Dr. Frauenberger's diary.

Otto Kempter described the last hours of the conquest of Nanga Parbat as follows:

"Buhl woke me up at 1 a. m. and said he wanted to go and started to make some tea. He was ready at 2 a. m. I then got up, collected all my gear and set off after him at 3 a. m. I followed his track up to the Silbersattel; the snow was in

good condition, so that Buhl had not had to tread out a path. Dawn began to break with the promise of another fine day. I reached the Silbersattel at 7 a. m., but Buhl was about an hour ahead of me. I had a rest on the Silbersattel plateau and, as I was starting off again, I saw Buhl, a small dot at the far end of the plateau. The sun was blazing hot here and it would have been nice to run about in a bathing costume. While taking another rest, I fell asleep for about an hour, at the end of which I was so lethargic that I found it quite impossible to go on any further. Buhl had now disappeared behind the lower summit and I decided to await his return here. I spent the rest of the day in a semicomatose condition and as Buhl had not returned by 5 p. m., I was obliged to go down to Camp V."

Why did Kempter not leave the rest of his food on the plateau, especially the much beloved Tyrolean bacon? Otto Kempter's reply to this was as follows: "You must realise that the plateau is exactly like a frozen sea. If Buhl had deviated only 60 ft. from the track he would not have been able to find it; it took him a long time to find his own sack, which he had left at the foot of the first summit."

July 4th (Dr. Frauenberger's diary). "I hoped that Buhl would turn up during the night, but he did not do so. So Otto and I were still alone next morning. By shouting I managed to make Hans in Camp IV understand that he must come up to V with oxygen, a tent and some food, as we did not know what had happened to Hermann.

"Through our glasses we searched the edge of the Silbersattel and the ridge leading to the summit of Nanga Parbat all day, but in vain. Our anxiety increased. Unfortunately, Hans did not arrive with his Hunzas until next afternoon, so that we had no time to put a tent higher up. He had brought the radio apparatus with him so that we could be in constant communication with Base Camp.

"Late in the afternoon we went up to the Mohrenkopf with the porters and I took the memorial tablet for Willy Merkl with me. Otto took the Hunzas back to Camp IV, and Hans and I decided to go up to the Silbersattel the same night, taking an oxygen set with us if possible in order to give what assistance we could.

"While I was fixing the tablet I could not help thinking, whether or not it would be necessary to add another name—from the 1953 expedition! I could not shake off this thought.

"While doing this job I kept searching the route right up to the Silbersattel and then suddenly I saw a tiny dot just leaving the Sattel and begin to descend the ice wall below. I shouted to Hans and to Otto, who was just then making the traverse of the Rakiot face with his porters. As for me, I got on with my job, alternately laughing and crying for joy. Hermann was coming back! It was like getting back one's own child from the dead. Oh, Hermann! whether you have got to the top or not is now of no consequence. The main thing is that you are alive!

"So that Hermann and Hans could sleep in some comfort in Camp V, where there were only two sleeping bags, I packed up and left before Hermann got back, as it was already beginning to get dark. I told Hans to give Hermann my warmest greetings and shout down to me what had happened.

"I stood in the gathering gloom near the Mohrenkopf by the memorial tablet and saw the two men meet and embrance at Camp V. Hans shouted down to me that Hermann had done it. Deeply moved, and with tears of joy, I told Willy Merkl, Uli Wieland and Willo Welzenbach, whose names were engraved on the tablet, that their sacrifice had not been in vain and that the job was done.

"Hans saw that I was still by the Mohrenkopf and called me back. Sleep did not matter now; that could come later. Hermann was fed with Nescafé by Hans and the oxygen set was all ready if needed. He was very worked up by three Pervitin tablets which he took on the plateau and could not stop talking."

At 7 p. m. Ertl reported to Base Camp as follows: "Hermann got back to Camp V, five minutes ago. He is sitting by me now, drinking Nescafé and inhaling oxygen." I spoke to Hermann myself and congratulated him on behalf of the expedition members. In a weak voice he replied: "Thank you very much for having allowed me to join the expedition; these have been the happiest hours of my life."

Buhl, Ertl and Frauenberger stayed together in a single bivouac tent at Camp V for the night of July 4/5th. Next day the rather exhausted Hermann Buhl was escorted back to Camp IV across the Rakiot face and down the steep ice slope. In the meantime Otto Kempter went up to Camp V with two porters to bring down the remaining equipment, and descended to Camp III the same afternoon.

Next day the assault party went down to II and half way met the evacuation party on its way up to the high camps. Aumann and Köllensperger went up to Camp IV with all available porters, and Aumann took the opportunity of going up to the tablet on the Mohrenkopf, in memory of Willy Merkl and his companions.

July 7th. The assault party reached Base Camp at about 2 p. m. After a hearty greeting we went into the large tent with Hermann Buhl to hear what he had to say.

Hermann Buhl's Story

"A furious storm raged all through the night of July 2nd/3rd and Kempter and I had to anchor our tent firmly with ice axes and ski sticks, as otherwise we might have been swept down to the Rupal Valley over the south face cornice only 16 ft. away. I slept very little, but Kempter had a good night. He had made tea up to 11 p. m. and then filled both our thermos flasks. I woke him at 1 a. m. and was

ready to start by 2.45 a. m. I filled my sack with dried fruits, tea, pullover, gloves, and camera, unfortunately putting the precious bacon in Kempter's sack. I then took my ice-axe and ski sticks and set off. Kempter got up later.

"I was below the Silbersattel by 5.15 a. m., just where the upward traverse to the saddle began, and got there at 7.15 a. m. Having reached the middle of the plateau above the 7500-m. line (24,600-ft.) I did not feel quite so good.

"At 8 a. m. Kempter appeared on the Silbersattel. By 9 a. m. I was level with the lower summit and felt sure of getting to the top by the afternoon. I left my sack with food and pullover, only taking with me my water bottle, camera, gloves and anorak. In the great heat, I went much better without a sack. I went round the north side of the lower summit (25,910 ft.) and at 2 p. m. reached the Bazhin Gap, just where it descends in a rocky ridge, where I took two Pervitin tablets. I still had a rock ridge to traverse, plentifully supplied with cornices, some gendarmes and much snow. The last gendarme was overhanging and very difficult, and then followed an ice tower which caused me considerable exertion. I got to the shoulder at 6 p. m., from which a rock and snow arête led to the top. I managed to by-pass some rock slabs on the north side.

"A last drink and then I attacked the last 300 ft. It was bare rock, except for the last few feet, which were snow covered. The rocks were beautifully warm to the touch.

"Exactly at 7 p. m. I rammed my ice axe in the summit cornice and tied the flag of Pakistan to it. After taking a couple of snaps, involving a change of film, I left the summit ten minutes later, at sundown.

"As the way up along the ridge seemed to me too dangerous to descend, I chose the snow face down to the Diamir Gap. On the way down my right crampon kept slipping, and I was only able to fix it temporarily, so that I virtually descended the slope with only one crampon and two ski sticks. This naturally delayed me a lot and I did not get off until night was falling. Just before it got completely dark, I reached a large rock, where I decided to bivouac. I had to stand all night on the face, having a gradient of 45–50° at a height of about 26,250 ft., without food, pullover or sleeping bag. Fortunately the night was warm and still, but my feet began to get cold by morning. The opposite slope was in brilliant moonlight, but the north side was in the shade, so that I had to wait some time before I could start down. Finally at 4 a. m. on July 4th I continued on my way, but slowly, for my right foot was frostbitten.

"The descent continued partly over broken rock and iced slopes. I kept seeing visions, hearing voices, and was convinced that I was not alone. Once, when I had lost my right glove, I heard a voice say 'Where are your gloves?', whereupon I got my spare pair out of my pocket. The route went below the Bazhin Gap, over towards the Diamir Gap, where the snow was packed hard by

the wind and very icy. It took me some time to climb up to the Diamir Gap in my weak state; I literally had to force myself forward, all the more so as the heat was excessive and the air parched my throat to the point of bleeding.

"Once on the Silber Plateau, I set off in the direction of my rucksack and my food. Again I heard voices and I had the illusion that my friends were bringing me up some tea. But the figures I saw were only the rocks of Rakiot Peak, just showing above the Silbersattel. I now recognised these delusions for what they were and realised that I must force myself onwards at all cost.

"Once on the Silbersattel, at 5.50 p. m., I could see the Mohrenkopf, and my exhaustion went, for I could see my friends there and at Camp V. I staggered on, having more trouble with my crampons, and took another Pervitin on the plateau. I took this risk as I knew that by the time the effect had worn off I should be safe at Camp V. Eventually I got there and was taken in hand by Ertl."

A few words about the Hunzas

Gilgit is in some ways similar to our Alpine valleys; even the people are like the Tyrolese and we felt at home at once. Their gardens, full of mulberry trees, tuja trees, elms and standard roses, together with a superfluity of brightly coloured flowers, could just as well have been in the Upper Bavarian foothills.

These Tyrolese types in Gilgit are all Hunzas. They come from the Hunza country which stretches along the river of that name northwards from Gilgit up to the mountain village of Hunza, at a height of 8000 ft. This Himalayan village is built in terraces in the lonely Hunza Valley. An enormous chain of 23,000 ft. separates this country from Russia, from Boihagur Duanasir to Batura, and a wonderful view of the northern precipices of Rakaposhi (25,555 ft.) is to be had to the south.

The name Hunza originally referred only to the river valley, but over the centuries was gradually extended to include the Buruscho race living there. Today, however, one only speaks of Hunzas. The 10,000 inhabitants of the mountain clan live in some 100 villages at heights varying from 5000 to 8000 ft. Owing to the extreme remoteness of their habitat, the Hunzas have preserved their thousand-year-old civilisation, despite their very primitive existence. The Hunzas, however, have retained the individuality of their race and when one goes to Gilgit or visits the Hunza Valley this tribe stands like an indo-germanic island in the midst of an Asiatic ocean. It is assumed today that somehow or other the Hunzas are of European origin, and indeed they have a legend of having descended from three warriors who remained behind from the army of Alexander the Great. Similar indo-germanic nuclei are said to exist in the high valleys of the Hindukush in Afghanistan; their linguistic roots, like those of the Hunzas, are not of

mongolian, semitic or indo-germanic origin, either as regards their vocabulary or word construction. The latest linguistic research would tend to show that the Hunza language has also developed independantly, along its own lines, over thousands of years.

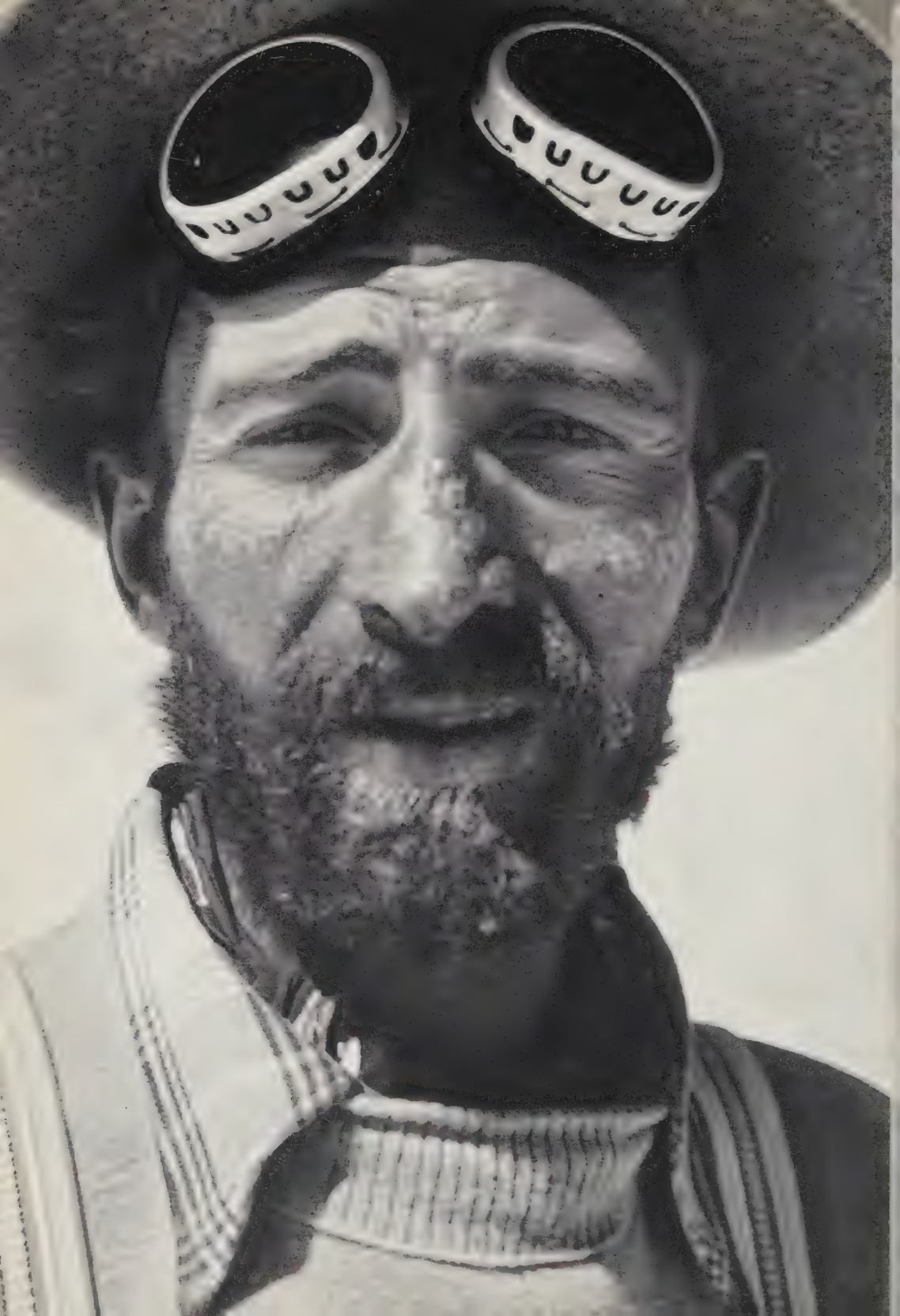
The royal dynasty of the Mir of Hunza, which has held sway since the time of the Crusades, most likely entered the valley from Persia. The reigning prince, who was present at all receptions and parties, is of a different race from the porters.

The real Hunzas who, as already mentioned, bear such a strong resemblance to the Tyrolese, are fine-looking men of medium stature, and if dressed in European clothes would not attract attention in the mountains of Austria. It is therefore not surprising that all the leading personalities in Gilgit come from the Hunza Valley.

Here follows a summary of the characteristics of the Hunza porters, which is of interest especially when one compares them with the Sherpas of Nepal and Darjeeling. In the main they can be favourably compared with the Sherpas as regards bodily and mental constitution, but they lack the mountaineering experience which the Everest porters have acquired over the past thirty years. The Hunzas only rarely came into contact with climbing expeditions and could not be expected to possess those mountaineering qualities so well developed in the Sherpa porters. It is therefore essential that the high-altitude porters from the Hunza Valley should have some sort of alpine training. I have in mind the proposed expedition to Chogori. This peak stands in another class from Nanga Parbat as regards the attendant difficulties. We just managed to conquer Nanga Parbat with the porters as they were, but it would be necessary to train the best porters in alpine conditions for several weeks before venturing on Chogori. I have therefore arranged for two members of the German Himalaya Expedition 1954 to take the Hunza porters in hand a month before the main party arrives and give them some elementary grounding in alpine technique. In this way I believe that we will provide a foundation for the mountaineering development of the Hunza people. Thus we would gradually realise our goal of forming a corps of climber-porters for future expeditions to the Karakorum.

Plate 25: This summit view taken by Hermann Buhl is quite authentic. It was very carefully examined by the Munich Technische Hochschule (School of Technology) and unanimously certified as having being taken from the summit of Nanga Parbat.

Plate 26: Hermann Buhl on return from his lone ascent of Nanga Parbat.



A NARROW ESCAPE ON K2

By Charles S. Houston, M. D.

In remotest Baltistan, the arid northernmost province of Pakistan, situated along the border of Chinese Turkestan, a range of fantastic mountains soars above the dusty valleys. This is the Karakoram range, a procession of rocky glaciated peaks which begins where the Indus River has carved an end to the Himalayan chain, and stretches 400 miles westward to end in the plains and deserts of Afghanistan and Turkestan. Among the giants of this range are six of the fourteen highest mountains in the world and an array of satellite peaks unequalled in mountain architecture. Although the name Karakoram is Tibetan for "Black rock", most of the peaks are reddish brown and rise as sheer as sky-scrapers above their valleys. At the westerly end of this little-known chain rises its king: K2, 28,250 ft. above sea level, the second highest mountain in the world, first surveyed in 1856 by Montgomerie.

Remoteness often deprives a mountain of a local name, and so it has been with K2. Finding no acceptable or accepted native name for this magnificent peak, the Surveyor General of India, in the late nineteenth century, designated it K2, the "K" standing for Karakoram, the "2" for its position in the survey series. In later years the peak has been named Godwin Austen after the Surveyor General, whose epitaph reads "He surveyed the Karakorum". Many natives call the peak "Lamba Pahar" (Long Hill) and if a native name exists, this is it. But K2 is most generally used, and to many of us the title seems to convey by its sound the austere, solitary quality of the mountain.

Men from many nations have been attracted to K2. The first climbing attempt was made by an Anglo-Swiss-Austrian party in 1902, but they became hopelessly entangled on the long, probably impossible, north-east ridge. In 1909 Luigi Amadeo, Duke of the Abruzzi, the famous mountaineer explorer, led an elaborate Italian expedition to the area; his fine party not only mapped and studied the entire area carefully, but succeeded in reaching 20,000 ft. on the steep and complex ridge which was later to be given his name. "Impossible" was his

Plate 27: Members of the expedition crossing the wide rapid Braldu River on goatskin rafts.
Plate 28: Ice-bridge over a stream on the Baltoro Glacier.

verdict. Not until 1938 was another attempt made on the peak (though a second Italian party visited the Baltoro Glacier in 1929). In that year I led a party of young Americans, variously seasoned in the Alps, Himalayas, and Alaska, on what was planned as a full reconnaissance of all possible routes on the southern face of K2. After spending a good part of the summer in difficult and fruitless exploration, we worked out a feasible route to the great snow-shoulder which lies below the summit cone. With time and food running out we nevertheless reached 26,000 ft. before retreating—and we felt the mountain above us "would go".

A second American party under Fritz Wiessner was given permission to attempt the climb in 1939, and spent the month of June and part of July on the ridge used by the 1938 party and christened "Abruzzi Ridge"—though "ridge" is too grand a name to apply to the broken "ridgelets", the slabs and towers which form the rounded southern face of the mountain. Wiessner and a Sherpa porter, Pasang Dawa, reached a point slightly over 27,000 ft. before returning. After this, tragedy was destined to end the expedition: one of the American climbers, Dudley Wolfe, became ill high on the mountain, and Wiessner was forced by lack of food to descend to Base Camp. A heroic rescue attempt made by three Sherpas resulted in the loss of Wolfe and the porters. Pasang Kikuli, one of the all-time great Sherpa porters, led this gallant but futile effort.

During World War Two, of course, no mountaineering could be done, but by 1946 numerous parties were trying for the coveted permission to enter this remote area. Partition—the separation of newly formed Pakistan from India—made this part of the world too sensitive for outsiders, and permission was refused each year until I was granted permission in the spring of 1952, for an attempt to be made in the summer of 1953. Thus was born the Third American attempt to climb the world's second highest mountain.

Such major expeditions do not spring full-fledged from the granted permission, however; months of work and planning must come first. Most important by far is the choice of a party. Obviously Bob Bates was an ideal second in command: not only had he been with me in 1938, but he had an impressive record of Alaskan and Alpine climbs extending over twenty-two years. Not the least of his talents is a never-failing sense of humor, and an inexhaustible fund of songs and ballads.

Six more men had to be found, six men of great climbing experience, with personalities which would stand the strain of high altitude and privation. We chose five men, and were delighted to find a score of others equally good who sadly had to be rejected—"Some other year", we said, and some of these "rejects" will distinguish themselves in the Karakoram or Himalayas in coming years.

George Bell, a twenty-seven year old theoretical physicist at Los Alamos, N. M., was the quietest and most unruffled of the party. He has climbed throughout the Rockies, Tetons, and Coast Range of British Columbia, but his outstanding climbs have been Yerupaja and Salcantay in the Peruvian Andes, both previously unclimbed. Art Gilkey, whose death high on the mountain brought the deepest sense of loss to our party, was a twenty-six year old geologist from Iowa who had climbed throughout the Western United States, had guided for two summers in the Tetons, and had spent two summers among the glaciers and peaks of Southern Alaska. He had an intense driving spirit, a generous and self-effacing nature, and a quiet personality that wore well in times of stress. Dee Molenaar, also a geologist, has climbed widely in the Sierra Nevada, Rockies, and Tetons, and was a member of the brilliant American party which made the second ascent of Mount St. Elias (the 18,000-ft. Alaskan peak first climbed by Luigi Amadeo). Dee is a steady and dependable climber, a talented painter and photographer, and an excellent companion. Twenty-six year old Pete Schoening of Seattle, Washington, has climbed in the Olympics, the Cascades, and the Rockies and led the successful King Peak-Yukon party of 1952. Shy and retiring, Pete was to be the work-horse of the party, always busy, usually helping others. Bob Craig, a twenty-eight year old graduate student of philosophy, has climbed for twelve years throughout the Rockies and Alaska. Together with his considerable skiing experience he had climbed more peaks than any other member of the party.

For management of the porters who would carry our food and gear to Base Camp, a transport officer was necessary, a man who knew the country, the people and the several dialects, and who would at the same time be a member of the climbing team. Captain Tony Streather, a twenty-seven year old officer in the British First Gloucestershire Regiment, and member of the summit team of the Norwegian party which conquered Tirich Mir (25,260-ft. peak several hundred miles west of K2), was highly recommended to us. After much consultation, he was taken sight unseen. Within two days of our meeting in Pakistan, Tony had become one of the most popular members: his disposition never changed, and he told fabulous tales of the far parts of the earth. Best of all he was not only a good transport officer, but he also became a strong packer and climber.

As for myself, I have climbed in the Alps and made two expeditions to unclimbed peaks in Alaska. In 1936 I helped plan the British American party that climbed the 25,500-ft. Nanda Devi in the Himalayas, and in 1938 I led the first American party to K2. Most of my military career was spent in the field of high altitude physiology. From my own work, together with the experiences of others, I felt confident that K2, 28,250 ft. high, could be climbed *without* oxygen by well-acclimatized men, and our plans were made accordingly.

I was particularly anxious to have a native on the party, but he must be a capable traveller, preferably a climber, and above all a friend. Thanks to Sir Zafrullah Khan, who had been a friend of the expedition from its inception, an ideal addition was found in the person of Colonel M. Ata-Ullah, affectionately and briefly to be known as "Ata" or "The Colonel". Ata is Director of Health Services for the Ministry of Kashmir Affairs and a very up-to-date and informed physician. Because of his lack of climbing experience, it was our intention to send the Colonel home from Base Camp, but, most fortunately for us, he was to evade this plan.

On paper we had experience and ability, but in fact we had far more—the ability, rapidly developing, to work together, to share troubles without complaint, and perhaps best of all, to carry humor even into the face of death. Whatever is the magic cement that binds men together, whatever are the qualities that make unbreakable friendships, we were to develop them, and soon. If we had not, it is probable that most of us would not have survived the troubles which we would have to face. Perhaps it is these magic bonds formed of joy and sorrow, success and failure, which make mountaineering expeditions—like all ventures of man into the heart of Nature—so wonderful and so attractive.

We were anxious to have with us a few of the famous Sherpa porters from Darjeeling so well known in the Himalaya, for our mountain packing. Consultation with Pakistan authorities indicated that because of the tension between Pakistan and India, inclusion of Indian nationals in our party though permitted would not be desirable, and we reluctantly decided to take instead some untrained mountain men from the valley of Hunza. As events were to prove, these men were excellent and will in days to come form an elite band of mountain porters for the Karakoram.

While the party was being chosen, all the myriad other decisions were taken also. Bates and I had drawn up food and equipment lists based on a dozen similar lists from other trips: samples of food, clothing, and equipment had been collected from all parts of the world, and during January and February the expedition's sinews began to accumulate in my home in Exeter. In mid-April all was packed, and after some frantic last minute changes of plan, shipped to Karachi. Bates got off by plane, not any less hurried, a few weeks later, to meet the shipment in Karachi, shepherd it through customs and up to Rawalpindi where the expedition would assemble, complete for the first time. Streather was also to cut ahead to collect porters and plan the porter train.

The rest of us met in New York on May 23rd. Then we were off, by Pan American plane across the Atlantic, over Europe, the Near East and into Karachi some forty hours later—truly a magic carpet travel which left us nearly breathless with excitement. Only twelve hours later we flew to Rawalpindi, to be greeted

at the airport by Colonel Ata-Ullah and Tony Streather. The expedition was together at last—the great adventure was about to begin. We spent five happy days in Rawalpindi as guests of Ata-Ullah. During this period we had the opportunity of meeting many of Pakistan's top leaders, and we were overwhelmed by their hospitality. We found them a happy, intelligent, and progressive country, and were treated far beyond the requirements of common hospitality. We shall never forget this visit, and never be able to repay our debt of gratitude to these splendid people.

June the first broke clear and hot (as usual during the summer months in Pindi), and in the early morning light we could see the blue Himalayan foothills shouldering above the misty plains. Trucks had carried our two and a half tons of equipment and food to the airport the night before, and all that remained was to say good bye to our hostess, Begum Ata-Ullah, collect our scattered last-minute things, and drive to the airport to begin the exciting trip to Skardu. Captain Henrik Franczak, who had been a pilot first in the Polish Air Force and then in the R.A.F. during World War Two, told us about the hour and a half flight which would take us through the foothills, over several 13,000-ft. passes, along-side of such giants as Rakaposhi, Haramush, and Nanga Parbat, all of them over 24,000 ft. high. The flight was all he had predicted; first the brown arid plains merged into gradually greener hills, steepening slopes, deeper gorges. Then appeared a little snow here and there, larger patches, glaciers, and then the great snow kings themselves. Our plane was joined by a second Orient Airlines plane piloted by Captain Makaymowicz, Chief Pilot for the company, who flew wing and wing with us through the rugged gorges, past mighty Nanga Parbat which the Germans were so soon to climb. All the time we flew among these fantastic rock and ice monsters the plane had painfully little clearance over ridges, summits, and between narrowing walls of deeper gorges. Suddenly, we saw the valley floor of the Indus, and in a sickening dive we seemed to plummet toward the ground. At the last minute the plane leveled off, skimmed some deeply-eroded gullies and touched down on the hard earth of the Skardu landing strip.

There had been many changes since Bates and I had arrived here after two week's march in 1938: then there had been some 2000 inhabitants, cut off by distance and mountains from the outside world. Now some 7000 people bustled through a rapidly growing city, primarily military, supplied entirely by air, complete with jeeps, trucks, a small electric light plant and a modern hospital—the last two products of our era being due almost entirely to the work and patience of the Chief Surgeon, Major Khan, who had come back to Pakistan from twelve years in London at the time his country needed him during partition.

We soon drove off to the village, leaving our equipment to follow under the care of the Northern Scouts, a local levy of smart and capable soldiers. Our few

days in Skardu were busy to say the least. The final packing had to be done, so that all loads would weigh approximately sixty pounds; our porters had to be selected, arrangements made for forwarding mail and sending radio messages. We greeted the Hunza porters sent down fourteen days march from the distant and famous valley of that name to serve as mountain porters for us. All this in a setting of vast open plains of sand along the Indus, precipitous red rock mountains capped with snow, and Lombardy poplars rising from the irrigated fields where the Baltis grow barley, wheat, mulberries, apricots, apples and peaches, which form their diet.

At last we were off: early in the morning of June 5th our "bandobast" (porter caravan) started down the steep trail to the Indus and was ferried across the mile of muddy rushing water in an ancient wooden barge. Then we started across the burning sands of the old river bed—our march had really begun—we were on our way to K2.

During the next two weeks we plunged deeper and deeper into a land of fantasy. Beauty is not a term one can generally apply to Baltistan and the Karakoram, though certainly there are places or times when intense beauty confronts the traveller. Rather, the land is one of harsh yet magnificent contrasts: immense rock spires soar thousands of feet to glistening ice-summits, while below, the stark brown monotony of parched earth, roaring uncontrollable glacial torrents, or ancient rock falls is broken only occasionally by the emerald green trees and fields of a village, irrigated by streams brought miles from a mountain torrent along ancient irrigation trenches laid out as well by these primitives as by a modern engineer. The villages have fertile fields on terraces built up and carved out of the steep slopes, where rich crops are grown with little effort. The climate is pleasant—hot in summer but mild in winter; the scenery incomparable; the menaces of "civilization" far away. One would think these people had a heaven on earth and perhaps they do. And yet they live in hovels like those used by their ancestors a thousand years ago, they are dirty beyond belief, their sanitation is non-existent, and illness is almost universal. As a doctor I could not help thinking what a wonderful change would be made by the simplest principles of cleanliness and public health. From the inhabitants of these villages we recruited the men who would carry our loads over the 125 miles of rough "path" to our Base Camp.

There is a common magic which sometimes kindles when men join together in a common effort, and this seems particularly true in mountaineering where the mountains above and around the climbers serve as a constant reminder of why men climb. In the vast reaches of the Karakoram and Himalaya, the experience is not restricted to the climbers but infects a whole expedition. The porters are not there for the money alone—it is hard and dangerous cash to earn, but because

they, too, feel caught up in the spirit of the hills and the hunger for adventure. Particularly is this true of the Hunzas, who feel themselves set apart and above the baggage porter, in a small elite band.

Unfortunately not all the Balti men felt "caught up by the spirit of the hills" and much of our time during the march was spent encouraging the laggards: a cigarette here and there, and frequent utterance of a word which sounded like "Shabash" (well done) would usually keep things rolling along. Lunch was eaten along the trail at about eleven, by those fortunate enough to be in the vicinity of whoever was carrying the luncheon that day, after which we usually marched until 3.30 or 4.00 to our camp-site. From Skardu to the snout of the Baltoro Glacier, some eighty miles, the days were blisteringly hot, the sun relentless, but as we climbed up the glacier the cooler weather made the marches more pleasant. Soon after the porters straggled into camp, Vilyati produced what passed by the name of "Tea"—several quarts of strong tea, crackers, jam, cheese, local fruit, and often a tin of sardines or kippers. Often we barely had time to finish this feast before dinner was served, but there never seemed to be any difficulty in devouring this meal too, consisting of dehydrated vegetables, soup, tinned meat or local chicken, pudding and a hot drink. We sat around our tent, or a camp-fire, until seven or eight o'clock, talking easily and happily on topics ranging from home and family, the day's march, world politics, philosophy—and occasionally some one would muse "If we can't find a good place for Camp III, will we be able to manage the long climb from II to IV in one day?" As we penetrated more deeply into the giants of the Baltoro, our mountain queries became more serious and more vital.

Some of our days brought more exciting jobs than plodding across the white hot sands. Between Bahar and Niyil, about half way from Skardu to Askole, the Braldu River had to be crossed, because our porters insisted that the old route, followed in 1938 and 1939, was no longer passable along the bank we were on. The crossing at first glance seemed impossible, for the brawling Braldu, here about a hundred yards wide, was far too deep and swift to ford, too rough to navigate in any craft presently available, and no bridge was here. But soon four men appeared, carrying a "zak" or goatskin raft—a most ingenious device widely used in the Karakoram valleys, made up of twenty to forty goat skins, inflated and bound together by a light, strong, yet flexible framework of split wooden poles. Fragile though this craft appeared, its flexibility gave it strength, and, after persuading the reluctant boatmen to make the crossing (more dangerous here than lower down in their home grounds), the long job of ferrying our bandobast began. First we found a place where a sand bar split the river; the smaller stream on our bank was forded with some trouble, and all the porters helped across. The waist-deep muddy water, cold as the ice from which it had

just come, swirled and boiled about them, often wetting the bulkier loads. Some men slipped and fell, to be rescued by sentinels from the banks. Some others could not face the rushing stream and had to be carried over by their stronger companions, and a few simply could not muster courage and were sent back home. Loads were wet and came perilously close to loss, but finally we got them all to the sand bar. There began the second leg of the crossing. The boatmen (one with six toes) carried the raft a half mile up stream, loaded four or five men and their loads aboard, and started off down the rapids thrown up in five-foot waves. Loud prayers were chanted as the craft disappeared in the trough of these rollers, bounced over the crests, shipped water, and seemed about to disintegrate. But the flexible poles allowed it to bend like a carpet over the waves, and we soon came to regard it as a very safe, in fact the only safe, way of crossing these streams. Our large bandobast took nearly two days to ferry across, for only five men could go on each trip, which required over half an hour for the return voyage, and we had, counting camp-followers, escort, and others who would not go all the way to Base Camp, nearly 175 men in our train.

Higher up the valley we came to another river crossing, even more trying on the nerves: the infamous "Rope"-bridge peculiar to the Karakoram. Made by twisting vines and twigs of a special tree together into thick "ropes", these bridges sag deeply from the high banks on either side as they span the river at a narrow place. They are said to be replaced only when broken, they are reputed to turn upside down often, pitching the traveller to a watery grave, and regardless of the truth of these legends, they are most unpleasant to cross. One walks along a twisted rope, or bundle of ropes, of these twigs, holding tightly to similar ropes waist-high on either side. The foot rope is supported from the hand rails by many smaller ropes, most of which are broken or loose, and the sway given to the whole structure, by the six or eight men who cross together, is most terrifying, particularly if, as is usually the case, a wind is blowing. To look down at the fierce water below causes severe vertigo—one must clench his teeth, watch feet and hands and push forward. We had three of these horrors to cross, each seeming worse than the last, and several of our porters parted from us at each one, but no one was lost, nor did even the most rickety bridge collapse.

Just below Askole we enjoyed the long-anticipated pleasure of a bath! Here is a series of natural hot springs, flowing out of the mountain, at precisely the perfect temperature for bathing. The natural pools have been only slightly improved by the local people, and, since the latter never bathe willingly, we enjoyed complete privacy as we soaked, up to our bearded chins for several hours. The water is slightly flavored with sulphur, and we felt certain its medicinal and cleansing qualities would make highly profitable a commercial Spa established there—with us as caretakers! Askole, the last village we would pass, lay just

beyond, and there we bought more flour, hired men to carry it, and were entertained by a local song and dance, spontaneously generated in our garden camp.

We then left the path, dignified by the name "beaten" and started up the last five days of rough marching to the Baltoro Glacier. On this giant glacier, one of the largest in the world, no trail existed, for the rock, sand, and gravel covering the glacier was constantly shifting as the ice moved slowly down the valley like a giant tossing in his sleep beneath a stony coverlet. Our marches were slow and laborious, and we covered little more than five or six miles in the eight hours of walking and climbing. The arduous work was eased by the incredible peaks above us. At regular intervals along both sides of the valley rose blocks of rock, rising nearly vertically for 5000 or 6000 ft., for all the world like sky-scrapers of a mammoth size.

Finally, about ten in the morning of June 19th we rounded the corner where the Godwin Austen Glacier, flowing from the north, joins the Baltoro. Here we should have our first glimpse of K2. But a great bank of clouds separated the high, impossibly high summit from the base of our peak, and allowed us only a tantalizingly incomplete view of our goal. New snow covered most of the rock and a formidable wind spewed a snow-plume from the summit. Even the most easy-going of us shuddered a little at the task ahead. Our porters murmured "Lamba Pahar udhar hai" ("there is the Long Hill")—surely an understatement. After this brief and awesome glimpse, clouds covered the mountain for the rest of the day as we marched up the long glacier to Base Camp. Snow began to fall as the tired porters straggled into camp late that afternoon—our long approach march was at an end, the real work was about to begin.

Snow fell heavily during the night making life pretty uncomfortable for our Balti porters huddled together like mice in their homespun blankets, and we were all happy to see a bright hot sun next morning, revealing unbelievably lovely views in all directions. To the south was the virginal white mass of Chogolisa (Bride Peak), 25,000 ft. high and as yet unclimbed. Due north, almost overhanging our heads were the precipices and rock slopes of K2, the summit hidden behind the bulge of the great snow-shoulder. Toward the east rose the upper Godwin Austen Glacier, a long series of crevasses and séracs, capped some fifteen miles away by the beautifully carved steps of Skyang Kangri, while the western view was filled by unnamed peaks above the Savoia Glacier. Though we felt the altitude of 16,500 ft., we all worked hard this day, unpacking boxes, sorting our mountain gear from that to be used at Base Camp, paying off porters, and organizing the camp which we would call home for the next two months. Bell, Streather, Schoening and I busied ourselves with these tasks, while Bates and Gilkey went up the glacier to lay out a tortuous route through the pinnacles

and cracks and find a site for Camp I. They returned that afternoon, elated: a good route had been found up the glacier, and a fine safe camp had been found at the foot of Abruzzi Ridge.

During the next few days we packed loads up the glacier, each of the eight Sahibs and six Hunza porters carrying about 40 pounds. As conditioning for the work to come, this was excellent, but no one considered it fun, for the sun beating on the fresh white snow made the glacier like an oven. The loads, though not heavy, weighed hard upon our unacclimatized shoulders. But the local porters, unequipped for snow-work, had to be sent home, and all the mountain carrying from now on would fall on us. Because of the peculiar steepness of K2, it is so difficult to find camp-sites adequate for more than two or three tents that we did not believe it feasible to have more than a handful of mountain porters with us, and firmly believed that by packing loads ourselves we would acclimatize more completely and more rapidly. But no one ever enjoyed the packing to Camp I.

Our problem on K2 was to build a pyramid of supplies through the various camps on the mountain, placing two men at the apex of the pyramid to make their bid for the summit. We planned Camp IX to be at 27,000 ft., a small camp for two men, with four more in support at Camp VIII, 1500 ft. below. The necessity of the pyramid build-up of supplies is obvious: without well-stocked camps below, the highest climbers would be inviting disaster if forced to retreat in bad weather. This was to be all too terribly impressed on us later. We planned, for example, to carry about 2000 pounds to Camp I, 1500 pounds to Camp II. Of this some would be left in reserve at Camp II, some would be consumed during the pack to Camp III, and only 1000 pounds would be taken to Camp III. Again that camp would be stocked, some food used during higher climbs or during storms, and perhaps 700 pounds would reach Camp IV. So it would go, higher and higher, and we hoped to establish Camp VIII at 26,000 ft., with food and supplies for eight men for two weeks—perhaps 250 pounds in all.

By the 29th of June Camp I was fully occupied, the route to Camp II reconnoitred and ropes fixed to the rock as handrails over some of the more difficult stretches. Camp III was soon found, a pleasant surprise, for I was reluctant to use the 1938 Camp III because of the rock-fall from above; instead a new and completely sheltered spot was found very near the more dangerous place. So far we had clear and warm weather. Two days later Gilkey and Craig and I occupied Camp II, and during the succeeding days, while the others relayed loads up this route, placed fixed ropes up to Camp III which was occupied five days later. To our great relief, the Hunza porters rapidly developed into safe climbers. Raised in mountainous terrain, they are naturally sure-footed on steep

and exposed places, but they had had no previous experience with ice and snow and very high altitudes; we had not planned to use them above Camp II, as we might have used Sherpas. But as time passed, we found our Hunzas stronger and more daring, and we soon realized that they would be safe even at the higher camps. So we all packed together, each carrying 30 to 40 pounds, Sahibs and Hunzas roped together.

Camp routine usually involved packing from eigth to three or four in the afternoon, with luncheon en route. After a return to camp, we dried socks, washed with a cup of water—precious stuff where snow must be melted on small gasoline stoves. Though the sun was hot, we did not feel like lying out of the tents for the wind was chilling; instead we usually read in our sleeping-bags: poetry, essays, the Bible, or wrote letters or diaries. Such leisured afternoons were rare, usually we got back too late to do more than cook supper—which took over an hour from snow to hot meal—and go to bed. Mail reached us for the first time at Camp II, and, as it does everywhere to men far from home, brought quiet delight to all.

Unexpected changes had to be made often; as for example, the case of Bob's tooth. A week earlier Bob Bates had loosened a tooth, and an abscess had formed which gave him much pain and slowed him down. Finally it became all too obvious even to Bob, who hates and dreads medical care, that the tooth must come out. Since Bates was then at Camp III with me, and the dental forceps were down at Base, this required some planning. By radio, we asked the Colonel to bring the forceps up to Camp I, where Bob Craig met him and carried the instrument to Camp II. The patient and I had in the meantime come down to Camp II, thus bringing the tooth, the forceps, and the surgeon together. Under the critical gaze of one of the Hunzas who enjoyed a local reputation as a dentist, I was able to remove the tooth with ease.

During the night of July 10th a brief but severe storm struck us. Clouds carried by a south-east wind piled up over the area, and by midnight heavy gusts of wind were driving snow into our tent ventilators. By sunrise it was over, but the newly covered rocks were more difficult and dangerous. Bell and Molenaar moved up to Camp IV, climbing without much difficulty the slightly overhanging gendarme just below it. The others packed loads and moved up as the camps were stocked. The weather seemed less settled than it had been, and we were impressed with the violence of the storm, but we did not realize as we climbed over the ice-covered rocks that we would not be warm again that summer. To the west the clouds stacked up higher each day, the weather seemed continually threatening, and if we had not had the assurance of history that the monsoon does not penetrate the Karakoram, we would have felt that the rain-laden clouds, which bring lifegiving water to the plains of India and Pakistan, were to bring snow

and danger to us. As we were to learn later, these clouds actually were shreds of monsoon, extremely and disastrously heavy for the plains this year, and these clouds, now only a threat, would bring disappointment, defeat, and tragedy to us all too soon.

As we climbed higher, the terrain became more difficult. Only in a few places is the technical difficulty great, but the mountain is relentlessly steep, and the climbing always exposed. Together with the numbing effect of altitude, the increasing cold and wind made the work trying in the extreme. Since we believed that climbing was a sport and not a life and death challenge, our every plan was made conservatively. We all had enough experience to climb safely, and our camps were well-stocked. The dangers were thus reduced to a minimum, though often—all too often—between Camps II and III—some small stone or larger rock, dislodged by the heat of the sun on the slopes far above, would zoom through the air like a bomb, reminding us that not all hazards could we control.

On the 14th of July another severe storm caught the party scattered in various camps, and not for two days could we move. By the 20th we were established in Camp IV, having left our Hunzas after their last pack to Camp III to return to Base, where they and the Colonel—by now rapidly becoming a seasoned climber—would remain (or so we thought). The packing was now up to us alone.

The sheer wall above Camp IV presents a special problem. Part of a marble buttress which crosses Abruzzi Ridge at an altitude of 22,000 ft., it is vulnerable in only one spot; a narrow cleft, known as "House's Chimney" after Bill House who first led it in 1938. This crack, though difficult, can be done, and makes possible the further ascent. To climb unladen such a vertical crack is hard enough at 22,000 ft., but with loads the job is exhausting and dangerous, so Pete had made an aluminium "A" frame which, tried out at home, worked well. With an anchor point out from the base of the chimney, and the "A" frame at the top, 240 ft. of nylon climbing rope was passed through pulleys at top and bottom—and we were in the aerial tramway business. In a day and a half we hauled 900 pounds of food and equipment up the chimney, a job that would have taken five days of dreadfully hard backpacking. Camp V was thus established only a short distance above the chimney on July 22nd, and loads carried up to Camp V soon afterwards. That afternoon the westerly clouds grew even heavier, and we again speculated about the weather, with some supporting the monsoon theory, and others believing it to be only a local storm. Tony felt the clouds were caused by pixies, but we discounted this idea since he was an Englishman. But during supper heavy snow began, and for the next three days of storm the monsoon theory gained supporters. Every morning and evening we talked on our wonderful walky-talkies with the Colonel, who, not content with remaining at

Base, had wandered first up the Savoia Glacier, and later clear up to Windy Gap, a 20,000-ft. pass some ten miles above Base. This had an especial attraction for him, since it formed the frontier between Pakistan and Turkestan. His venture was a considerable accomplishment for a man who had never before seen a glacier, and we were very proud of him, though I kept insisting that he be more cautious. His cheerful voice on the radio twice each day was most comforting to us, and even more comforting was the knowledge that he was there at Base, in support, meeting the mail runners each week, and generally giving us what every party needs—a firm base. Little did we realize how valuable this support was soon to become.

On July 26th all eight of us packed to Camp VI, and established Craig, Bell and me in two tents, pitched precariously on rock platforms below which the main slope drops violently for thousands of feet to the crevassed glacier below. During the next two days, in bitter cold and wind, we worked out a route to a point about 24,800 ft. which became known as Camp VII Cache. The climbing was difficult. Steep pitches of rock, offering only few handholds under normal conditions, were sheathed in ice or powdered with snow. The wind struck with deadly penetration, and two suits of special underwear, insulated trousers and jackets, wind pants and double parkas, with three layers of gloves on our hands, and the vapor-barrier Korean Type of boot on our feet did not keep the cold from seeping in.

From Camp VI we then relayed loads to the Cache, despite increasing bad weather. We could not believe that the weather could continue so bad: the 1938 and 1939 parties had experienced long stretches of fair weather at this time of the summer, and others all considered this a safe and good time to attack the mountain. Yet another severe storm hit us on the 28th. Next day it was possible once more to pack up to the Cache, and by the 30th we felt safe in moving Schoening and Gilkey up to the best site we could find, a miserably narrow and cramped platform hacked out of the ice a few hundred feet above the Cache. We planned to have them look for Camp VIII, or if possible, to locate the site used in 1938 and 1939 for Camp VII, while the rest of us moved up loads. Their tent-site would not be adequate for more than one tent, nor would it be safe should snow fall on the steep ice above. On the next day we at Camp VI were in heavy clouds, with wind and cold too great to permit climbing. Over the radio Schoening and Gilkey reported slightly better conditions, and they spent the day reconnoitring, first across the famous ice traverse crossed in 1938, where they found conditions so changed by ice movement that no camp was possible. Next they chopped their way up the steep slope of ice directly above camp taking two hours to climb 300 ft. or less. Above this sheer slope the gradient lessened: snow lay on the ice, and they were able to kick steps and laboriously plow a way up 500 or 600 ft.

Here, surrounded by clouds and blowing snow, they radioed down the good news that a great level platform had been found, and Camp VIII could be established. Their work that day was magnificent and made possible all the events that followed.

Though July 31st was far from sunny and the wind bitterly cold, we felt that four of us should move up to Camp VIII. By this time we felt that our bad weather must be nearly over, and we were anxious to be in a position to try for the summit when the good weather arrived. We were all wonderfully acclimatized, climbing well, and we had at least twelve days of food at the Cache above. We had come to believe that it was essential to climb, even in poor weather, if we were to have any hope of getting up our mountain. The issue was joined. It took us almost all day to make this trip from Camp VI to Camp VIII, some 2200 ft. with our sleeping-bags, more food and fuel, and extra tents. We climbed with special care belaying carefully, checking toes and fingers; slowly and steadily, with only brief and rare pauses to rest. We ate little—it was too cold to stop long. We wondered occasionally where we would spend that night: in a miserable bivouac at the ledge Camp VII, or could we make Camp VIII? Late that afternoon we dragged ourselves through the deep snow to the tents pitched by Pete and Art at 25,500 ft.—Camp VIII was ours.

Next day the weather seemed a little brighter. Bates and Streather down at Camp VI were eager to join us, and we agreed to meet them at the Cache, all of us to bring more loads to Camp VIII. But the weather thickened again during the morning and by noon it seemed too bad for them to come up. We returned to camp, bringing heavy loads from the Cache, and snuggled into our sleeping-bags late in the afternoon. Just at dusk we heard a weary hail: it couldn't be, yet it was. Bob and Tony, guided by the willow wands we had planted in the snow every 50 ft. up the snow slope, had somehow managed to carry their camp through the storm to us. As we fed them hot drinks, pitched their tent, blew up their air mattresses, we were all jubilant. Tired, cold, yet strong and well acclimatized, we felt a great elation. With our morale and team spirit, what could stop us? Given four days, even three, the job might be done. Two of us, standing on the shoulders of all the rest, might reach the summit—if the weather cleared.

But it was not to be. Storm clouds which had been piling up ever more heavily in the past week now broke upon us in full fury. We awoke during the night of August 1st—Swiss Day—to the cannonade of tents flapping furiously in a wind which increased steadily. New snow and blown snow whirled in blinding fury about us as we looked through our tent doors next morning. Obviously we could not move that day and we lay in comfort—comparative comfort let us say—while the storm raged. The beautiful down sleeping-bags,

obtained through the help of the Swiss Foundation for Alpine Research, were very warm, and we were quite comfortable except for the banging of the tents against our heads. We dozed fitfully and talked lazily, mostly of home, of other storms we had known, of books. Streather told more wonderful tales of the frontiers of Pakistan; Bates read poetry aloud from the tattered book of English verse which I have taken on every one of my previous expeditions. We tried several times to cook, to melt snow for tea, but the flapping of the tents blew out the flame of our small gasoline stoves which heretofore had been so excellent. From the Colonel at Base Camp, the radio message that night was "more storm".

So the next two days passed. "Surely", I thought, "the storm must end tomorrow". We all felt so strong, so well, so fully acclimatized, that the summit seemed within our reach. It seemed time, therefore to choose a summit team in case the storm should relent. I had expected that altitude, health or fortune, would eliminate two or three men from possible candidates for the summit team, and I had therefore anticipated that selection of a party would not be too hard. But here we were, all eight of us, in good condition, apparently *all* ready for a summit attempt. We decided to vote for the first and second teams. So on August 2nd we took what surely must be the highest secret ballot ever taken, without any pre-election campaign! Bell and Craig were chosen for the first team, with Gilkey and Schoening for the second. We had long planned, *if* we reached the summit, to keep the names of those who actually stood on the top a secret, in order to emphasize to the world the team quality of our enterprise. We hoped to be able to announce that "the expedition" had reached the summit. But this was not to be.

For the next week the storm raged about us. There was a malevolent, a malignant quality to the wind which beat upon us. No matter how we moved to avoid the slapping tents, we could not escape the blows of the tortured fabric. During a lull we would relax, stoves would be lighted, talk of the summit revived. Then new gusts, harder buffets would blow out the stoves, and dampen our plans. Snows sifted through crevices in the tents, dusting our clothes and sleeping-bags. We slept in all our clothes except our boots, shoulders wrapped in the eider down jackets which had been specially made for us at home. To leave the tent was virtually impossible except during brief lulls and even then blown snow and piercing wind sent us quickly back. As we watched the tents flapping it seemed impossible that any fabric could long endure.

In the white hell that surrounded us we could seldom see more than 50 or 100 ft. We lived in an isolation removed from all reality save for the constant wind and cold. Surrounded by snow and ice we were dreadfully thirsty. Hunger was not a problem, for we nibbled fruit, candy, crackers, cheese or dried meat. But we were always thirsty. Eating snow mixed with jam helped very little and

made us cold. Trying to melt the snow-jam sherbert by body heat merely lowered the latter. Our skin lost its elasticity, our bearded faces became haggard and thin.

Can such an experience be called sport? Did we really "enjoy" this ten-day period of cold and wind, of worry and privation? Perhaps not in the sense that we "enjoy" tennis, sailing, or alpine climbs. But there is a primitive and fierce satisfaction derived from facing up to naked danger. Not in a masochistic sense did we enjoy the discomfort thrust upon us. But we eight, alone above the world, were defying nature in her wildest, most awful moods. Removed from all help, shut off from even a glimpse of the safety of Base Camp, closed in from even the sky itself, we were fighting for our lives. All non-essentials had long since been stripped away. Only basic needs were left—food, drink, shelter, and companionship. From this primitive struggle has come memories and inner strength beyond "sport" or "pleasure".

Our only contact with the outside world came from our radio talks with Ata at Base Camp. Twice daily we called him on our walkie-talkie radio, and the encouragement and support he gave us by his mere voice were inestimable. The radio forecast for each day, broadcast by radio Pakistan and picked up by the Colonel for relay to us, differed only in the phrases used: "continued storm" or "high winds and snow", or "possible clearing followed by light snow-fall". But the days all seemed the same.

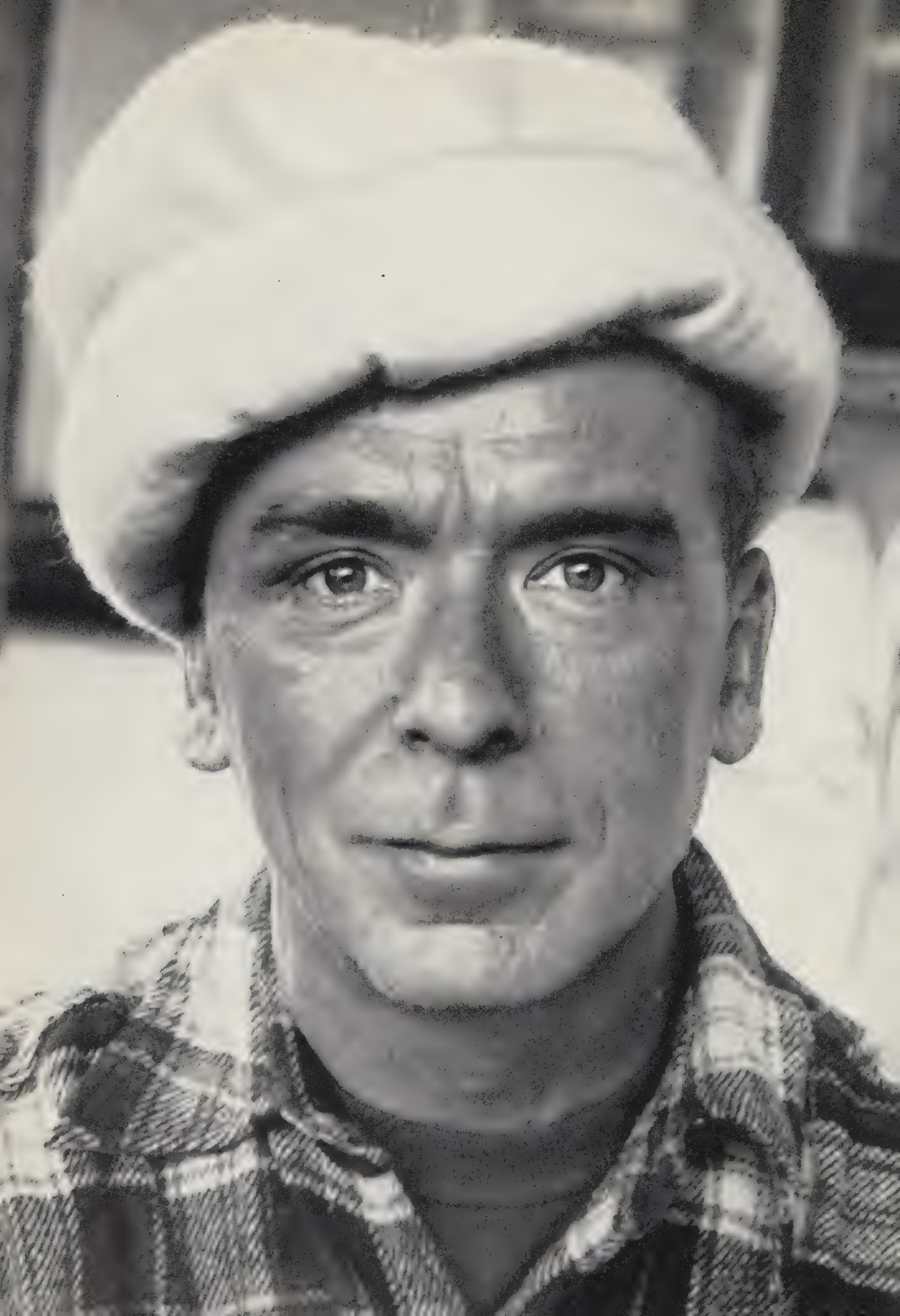
On the 5th of August before dawn, Bell and I watched runs appear in the nylon fabric of our tent. Should the fabric rip before daybreak we decided to lie in our sleeping-bags, knowing that we could not survive the short trip to a neighboring tent in the darkness. By 7.00 in the morning the tent was on the verge of collapse; we dressed, put on boots and gloves, and prepared to move. Suddenly the tent poles collapsed, and the tent tumbled about us. We were barely able to drag our sleeping-bags each to another tent, where we were welcomed by the crowded pair already there. This short trip emphasized again the severity of the storm, and the gravity of our position, even though we still had six or seven days of food and fuel remaining.

Next morning brought fresh disaster. For days Gilkey had noticed a charley-horse or cramp in his left leg, which he did not mention, because it seemed too trivial. But during a lull in the storm he crawled out of his tent and tried to

Plate 29: Base Camp at about 5000 m. (16,400 ft.) opposite mighty K2.

Plate 30: Skyang Kangri (7544 m., 24,745 ft.) seen from just above Camp I on the Godwin-Austin Glacier.

Plate 31: K2 and its south-east ridge, showing its ribs spread out in fan formation. The "Abruzzi Rib" in the centre of the picture divides the left hand ridge wall; on it are located Camps II to VII. The scene of the accident is where the two parallel ascending ribs join the "Abruzzi Rib". Camp VIII is situated somewhat higher on the snow ridge ascending to the right.



stand. He fainted from pain and had to be carried to his tent. When I examined him, I knew only too well what had happened. He had developed phlebitis in his left leg—blood clots had obstructed a vein in his calf. This condition is uncommon in healthy young men, unless some injury or infection precipitates trouble. To my knowledge, it has never been reported previously in high altitude climbing, although one would expect the dehydration, inactivity, and the increased blood viscosity, which comes from the increased red blood count of acclimatization, to bring it on. But whatever the cause, the result was clear: Art could not walk but would have to be carried down.

This prospect chilled us. Below was a steep slope covered at first with waist-deep powder-snow, later with glare ice where the slope was too steep to hold the snow. Then came nearly 1800 ft. of rock, rock which is difficult under any conditions, steep ice-covered, and dangerous even to a fresh party. To attempt to lower Gilkey down this precipice, newly frosted with fresh snow and ice, through storm, seemed impossible. Yet I felt it had to be done.

By noon we had packed up our sleeping-bags and clothing, wrapped Gilkey in his sleeping-bag and the torn tent. Leaving our tents still standing, we started down, dragging Gilkey through the deep snow. As the slope grew steeper, we had to hold back on our burden, and within a 100 yards of camp there became obvious what we should have known sooner; the whole slope was ready to avalanche. We turned about and started back. It was heartbreaking to try to carry or drag Art, in fact impossible. Only by having him make leaps and pulling as he pushed with his good leg did we regain our camp, the 100 yards taking over an hour to cover.

Our situation was now grim indeed. Normally at sea level under good conditions phlebitis recovers in one or two weeks. But under our circumstances we could not hope for this. It was all too clear that we could not carry Art, nor could the whole party remain much longer at Camp VIII—25,500 ft. Yet we must wait for some clearing in the weather, and, more important, a better route of descent must be found. Schoening and Craig thought that a steep rock-ridge to the west of our first route might go, and after a brief rest they went off through the storm to reconnoitre. I explained to the others in camp how precarious was Gilkey's condition. Should pieces of the leg vein clot break off and be carried into the lung as emboli, he would probably die.

Late in the afternoon Schoening and Craig returned with cheering news. Through broken cloud and driven snow they had gone down the ridge to within sight of Camp VII and felt that the route below, though steep and icy, should be possible. As for lowering Art, this would be terribly difficult anywhere.

Plate 32: Charles S. Houston on his return from Skardu at the end of August 1953.

Our radio that night brought more bad news. High winds and heavy snow were predicted, though Ata reported the weather not too bad at Base Camp. About a foot of new snow had fallen there, and he could see a cloud ceiling which extended upwards on the mountain from about 22,000 ft. The accuracy of the forecast was confirmed next day by the increased velocity of the wind. Nothing could be done.

Our situation was now desperate. In another four days supplies would be exhausted, and we were already depleted by lack of sleep, food and drink. None of us could think of the grueling task ahead. Yet we had little choice. Finally I decided to send the party down to Camp VI as soon as the weather made this possible, where they could remain in support, thereby extending the Camp VIII supplies for ten or twelve more days. As a doctor, I would remain with Art until he either recovered enough to be helped down by those who would come up to meet us, or until he died. Tony would stay with me. The others would retreat as soon as the weather cleared.

Throughout all this harrowing period, our morale remained surprisingly high. Looking back on those days far from the comforts of home, it seems incredible that we could joke and make light of our situation, that we could read poetry, talk of future plans, even talk of a possible summit try, as late as this. Sometime during the 6th of August, the wind lessened enough to permit us to make one gesture of defiance. By this time we had all realized that the summit could not be reached, but I felt it would be good for our morale if we could make an upward move before retreating. On that day Craig and Schoening, therefore, through blowing mists with a visibility of less than 100 ft., climbed perhaps 300 ft. above camp up the steep snow-slope towards the summit. Though they could see nothing, and returned thoroughly chilled, at least the party had gone above camp before descending. A futile gesture in the face of death perhaps, but indicative of our spirit.

On August 9th Gilkey began suddenly to cough, and examination confirmed my suspicions—blood clots had lodged in his lungs. Though in poor condition, he was as always cheerful and uncomplaining. I moved into his tent that day. We talked of the mountain, of the party, of our chances even then of getting the three days of clear weather which would give us, as we believed, the summit. I think he must have known his fate, but we never discussed it. He was as brave a man as any I have known, because next day when the decision to go down was irrevocably taken, he never hesitated. Because of the pulmonary emboli and his worsened condition, I was certain that his only chance of survival was to be taken down. This chance, terribly small though it was, we had to give him.

About nine in the morning of August 10th we started down, leaving tents and unnecessary equipment behind. Visibility was about 100 ft., but no snow

was falling at first, and the wind had slackened. Gilkey, in his sleeping-bag, wrapped in the torn tent, was dragged to the steepening slope and then began the slow and laborious job of lowering him down the ridge beneath. Snow swirled in our faces, icicles formed on beards and eyelashes. We spent over an hour on one short pitch. Late that afternoon we were within a few hundred yards of Camp VII when tragedy struck.

Gilkey had been lowered over a small vertical cliff, with Craig guarding the ropes, when a small powder-snow avalanche covered both men. Somehow Craig held fast, and Streather, who was just above, shouted up to Bates and me, belaying on the rock-ridge, that all was well. Then Streather and Bell, whose frozen toes made climbing painful and difficult, climbed carefully across the steep ice with Bates and myself following closely on a separate rope. Bell tripped and fell, pulling Streather off immediately. The blurred events of the next few seconds are still not too clear. Apparently Streather and Bell fouled their rope on that between Gilkey and Schoening. Schoening was firmly anchored with an ice-axe belay behind a small boulder and to make doubly certain a body belay beyond this. As the second rope was pulled off, Bates and I became involved in Bell's rope, so that all five of us falling were tangled in the rope finally belayed by Schoening. By some miracle of coordination and strength he was able to hold us all. The nylon stretched like a rubber band, but did not break, thanks to his dynamic belay. When the fall was finally stopped, five of us lay on the rocks below, precariously balanced above an abrupt cliff which forms the upper end of Abruzzi Ridge. I was unconscious, Bates hung upside down above me. Molenaar and Streather, bleeding and bruised, helped Bates, who unroped and came down to me. Bell had lost both gloves and pack; his hands in this short time were stiff and white, and Bates quickly gave him extra gloves. Streather, bruised but effective, reassured Gilkey and strengthened the belay on him by leading another rope to a second ice-axe driven deep into the slope. Schoening, shaken by the event in which he alone had saved our lives, anchored Gilkey to his axe and came over to the ledge.

Gilkey was thus left on the steep slope, strongly belayed, while two tents were pitched on the narrow ledge chopped out of hard snow. The less injured men hoped to be able to drag him across the 100 yards to camp, but first, tents must be pitched and the injuries appraised—this took about 45 minutes. Then Streather, Bates, and Craig went out to Art, to cover him or bring him food. Through the blowing snow they could see nothing. The slope was bare of life. Art had been carried down by another avalanche. Even the axes were gone.

By this time it was nearly dark. If any of us were to survive the night, it was essential to get rest, food and drink. Four of us in one small tent could do no cooking, but the three crowded into the bivouac tent were able to make tea

throughout the night. No one slept. We were comparatively warm, and by a blessing the wind stopped at darkness. The gray morning light found us shaken but intact, and the descent continued.

How we managed the route to Camp VI is hard even now to imagine. The wind had risen again, and blew snow up the cliff like a river in our faces. Even small ledges were covered with powdery snow or ice, and our fixed ropes were frozen to the rocks. Even under ideal conditions this section of the route, called "The Black Pyramid", is difficult; to our shaken bodies it was a nightmare. So great was our team-spirit, so strong our morale, that each of us, concentrating on each separate step and hold, was able still to cheer and encourage the others. To reach Camp VI took eight hours, but we made it without a slip. Traces of Gilkey's fall were seen—a scrap of the tent, a broken axe, and the ropes—grim tokens of the tragedy that had overtaken us.

Camp VI seemed like heaven, though one tent was filled with snow and the other almost buried. We were able to make tea and drank all we could hold. Bates gave me half of his sleeping-bag, while Molenaar shared his with Bell, since both of us had lost our own. Miserable though we were, bruised and tired, we managed to sleep and woke in the morning hoping for a better day. On the Camp VI Radio we were able to communicate with Ata, nearly frantic at Base Camp during the 36 hours after our other radio had been lost, and to reassure him about our condition.

The next day was worse. Through the renewed intensity of the storm nothing could be done, and we lay in our tents and tried to fill up with liquid. In mid-afternoon I decided that we must try to get down to Camp V: Bell's feet were getting steadily worse, and both Molenaar and Craig had frost-bitten heels. Schoening, who had been nearly disabled with pains in his chest due probably to slight frostbite of his lungs, was better, and he and Streather elected to start ahead, to ready Camp V for the crippled rear-guard. After they had left, we began to pack our loads, planning to follow within an hour, but the storm grew so much worse that I feared for the frost-bitten party and postponed our start until the morning of August 12th. Though this was little better, we felt that an attempt must be made. Abandoning all except essentials, we started down, again finding the route terrible hard. At Camp V, which we reached by three o'clock, Streather and Molenaar greeted us with hot drinks before we continued our descent. How they had managed to reach camp in the worsening storm of the day before is hard to imagine, but they had.

House's Chimney, between Camps V and VI, was very difficult. The "A" Frame was not helpful in lowering loads, which tended to run away down the cliff, so we had to bump and bounce them down the chimney itself—a laborious job. Molenaar, Schoening, and Craig went down to set up camp but it was dark

before we others began the steep stretch. Bates and I were left in full darkness at the top of the chimney. As I belayed him down—as rapidly as he could climb—I thought to myself "this is it. I can never climb down this pitch in total darkness through storm, unbelayed". To add to our problems, fragments of the fixed rope left in 1938 and 1939 lay frozen to the ice here and there, and in the darkness these old rotten ropes were indistinguishable by feel from our own strong new rope.

I stood briefly alone, terribly alone, sustained by the thought of my friends below. Some strength came to me in that time of need, some support, and I climbed down as well as I have ever climbed when fresh and unhurt. Guided by Schoening's cheerful voice, I walked across the steep ice-slope in his foot-steps through complete darkness, and together we reached camp, where we were restored by tea and hot food from our friends.

After another night of better sleep, we had new hopes and continued down to Camp III through slightly better weather on August 13th. A snow-slope just above this camp, which normally would take only a few minutes, was solid ice and took almost two hours to cover. When we reached Camp III, about 2.30 in the afternoon, exhausted as we were, it was debatable if we should be able to make Camp II that day. Another night climb seemed impossible. After some discussion it seemed imperative that we continue, and so we did, finding the route more easy than expected. Even moving as fast as possible it was dusk before we reached the steep traverse above Camp II. Here a surprise met us.

The six Hunza porters, who had spent the last few weeks at Base Camp with Ata, had come up to Camp II a week previously to wait for us. Running short of food, unable to communicate above or below, they had wisely sent two men to Base Camp for more supplies. These had returned only the day before. Our six porters, hearing our voices on the ridge above, came dashing up the slope like monkeys, traveling safely and well over difficult rocks, to greet us. In the gathering darkness they hugged us, wept, prayed over us, and took our loads. Then we were helped down the remaining rocks to Camp II, where hot drinks, massage, and more prayers made the evening an unforgettable one.

On the following day the weather was crystal clear—except for clouds above us on the mountain. We basked in the unaccustomed sunlight, and finally, reluctantly, packed up to go down to Base Camp. Bell's feet were now in terrible condition. How he managed the difficult rock climbing between Camps II and I we do not know, but manage this he did. By mid-afternoon we were on the glacier, and soon were greeted by a stretcher party sent up by Ata from among the coolies, who had come in a few days previously from Askoleto carry our loads out. By the end of the day we were all united at Base Camp—all that is except our comrade Gilkey, lost on the mountain he had fought with so much courage. As we relived our experiences for Ata, it was hard to see how we had survived. The

fact that we had may be attributed directly to the sense of comradeship and generosity which all felt.

In the warm sun of the next day the events of the preceding weeks seemed like a nightmare. There remained to hold a brief ceremony for Gilkey and to leave his ice-axe and some of his belongings in a metal box on top of a large cairn built by Ata and his porters. This moving ceremony completed, we turned our thoughts toward the march out. Bell would have to be carried. A camp bed was improvised into a stretcher, and twelve porters assigned to this. The rest could walk, however weakly. On the morning of August 17th, through gathering clouds and snow, we left Base Camp. One look back as we walked down the long hill toward Concordia showed us the mountain shrouded in heavy clouds which we knew all too well meant unbearable wind and storm up above.

The next two weeks, though difficult, were not unpleasant. Our march usually began before sunrise, and lasted almost until dark. Our progress was slow. The twelve men assigned to Bell behaved magnificently, and the stretcher was carried over places which seemed impossible. Along the steepest side slopes, where footholds were difficult, one porter carried George on his back. As we left the Baltoro Glacier, without regret it must be said, we looked with joy and pleasure on the grass and shrubbery of the upper valley. Askole seemed like a metropolis. We were royally welcomed with fresh fruit, vegetables and eggs. The hot spring was even more luxurious during the march home than it had been on the way in. Schoening, Bates and Ata elected to cross the Skoro La, hoping to get to Skardu a few days ahead of us, while the rest continued down the valley feasting on fresh apricots, apples, pears, and peaches. Our footsore progress was slow, but we managed to pass Dassu, and continued on down the same side of the river to Kochumal. Here we recruited a zak, or goatskin raft, and crossed the river to spend the night at Yuno. On the next day we floated down to Skardu in a mere four hours, compared to the two laborious days of walking on the way in. In Skardu the party was reunited, the injured were cared for by the excellent Dr. Khan who runs the small but splendid Skardu military hospital. The Political Agent made us welcome guests, and our stay, though brief, was unforgettable.

On the following morning, August 29th, covered with flowers and cheered by a large crowd through the entire bazaar, we drove to the air-port where a special plane, sent most generously by Orient Airways, awaited us. The flight home was even better than the flight in, and we circled Nanga Parbat recently the scene of the magnificent climb by the Germans. In Rawalpindi we were greeted by our old friends and spent several happy days there. Then on back to the United States, saddened, weakened, but not daunted.

Lessons of the trip have not yet all been learned. Certainly the weather was unfortunate. It was a season of great rain-fall throughout the Sub-Continent, and

an unusually heavy and late monsoon. Usually the monsoon does not penetrate to the Karakoram, the moisture-laden clouds dumping their precipitation on the outer peaks. But this year undoubtedly we had felt the full force of an exceptional monsoon. We should have attempted the climb a month earlier, but then one would face the difficulty of high rivers and snow on the Baltoro Glacier. In 1953, even a month earlier, we would have encountered severe storms. Generally speaking, I think 1953 must be counted a year in which the Karakoram were unclimbable.

So far as equipment, supplies, and general preparations were concerned, the party had done well. With minor exceptions our plans had proven correct. No one had complained of lack of food, and our clothing had stood up well, except for the boots which, as always, were not too satisfactory. In another year I shall take very much the same general food and equipment.

But the deeper lesson, the richer experience, came from the comradeship, the courage, strength, and endurance of our party. Other climbers have endured similar hardships. Few if any have remained so high so long, and surely no others have ever gone through what we had gone through at that altitude. That we survived at all is due to the strength of the bonds between us, as well as to the hand of God which guided us during hours of trial.

Appendix—Medical Aspects

The medical aspects of this expedition deserve mention. During the approach march of sixteen days we were free from illness despite camping in several unsanitary villages. We had little control over our kitchen and drank dubious water on several occasions. After the worst of these villages the party took prophylactic aureomycin for several days. Three mild cases of a "grippe-like disease", which may have been dengue fever, endemic in the area, lasted only two days each. During the homeward march when most health precautions were abandoned our only ailments were brief bouts of diarrhea from gorging on fresh fruit.

Our degree of acclimatization was so good that I firmly believe we could have reached the 28,250-ft. summit given a few good days early in August. The two oxygen apparatus taken through the kindness of Dr. Ulrich Luft were left at Base Camp. We remained for 60 days at or above 16,500 ft., for 25 days above 20,000 ft., and for 10 days at 25,500 ft. Despite the shortness of breath, easy fatigue and loss of ambition to be expected at high altitude, all eight climbers were in good condition upon arrival at Camp VIII. All wished, and were considered able, to go higher, and in fact during a brief lull in the storm two men did go several hundred feet higher. I attribute our excellent condition largely to the heavy packing we did above Base Camp, for we used only a few porters to Camp III and carried as much as or more than they did. Only on a few reconnaissance trips did climbers go without heavy loads (50–55 lb. to 19,000 ft., 35 lb. to 22,000 ft., and 25 lb. to 25,500 ft. Deliberate hyperventilation demonstrated beneficial effects at higher altitudes and consciously controlled rhythmic breathing was helpful. The integrity of our mental processes is attested by the character of our radio communications with Ata-Ullah, unaffected at Base Camp, as well as by the clarity of our decisions in our hour

of trial. My earlier experiments in an altitude chamber, demonstrating that acclimatized man can reach over 29,000 ft., would seem to be confirmed.

As on any climb, dehydration was a major problem, particularly during the storm at Camp VIII. Undoubtedly this contributed to the phlebitis developed by Gilkey. When one reviews the incidence of phlebitis in polycythemic individuals, it is surprising that this should be the first such case recorded on a high altitude climb. Gilkey had neither injury nor frostbite to predispose to this illness; indeed he was counted one of the fittest men.

All developed minor degrees of frostbite despite vapor-barrier boots and adequate handwear. Craig and Molenaar developed ulcers on their heels from frostbite, but have recovered completely. Bell frosted nearly all his toes which were in poor condition during his heroic descent to Base Camp through the storm. He was given Roniacol tablets (an alcohol ester of nicotinic acid), anti-biotics, and local cleansing, and the fact that he has lost only one and a half toes and is now back climbing and skiing would seem to justify this conservative management of such injuries. Schoening is believed to have frosted his lung or at least his trachea during hard work in the cold but has recovered fully.

We all lost from 15 to 30 pounds in weight, quickly regained. Added vitamins were taken but should have been more used at higher camps. Our craving for fresh fruit was abnormally great. No sore throats were noted, such as are a constant complaint on Everest, nor did we detect any failure to heal of cuts or abrasions. Insomnia was a problem not completely solved by sedatives.

The prolonged period of enforced inactivity at Camp VIII made us weak, and certainly contributed a good deal to the slowness of our descent. That we were able to climb down through storm, after the accident at Camp VII, without a slip, is remarkable.

If any "physiological truths" can be derived from our experience, I believe one can say with some assurance that a fit party which works hard at lower altitude can acclimatize sufficiently to climb well above 26,000 ft. and probably to 28,250 ft. without added oxygen. Cold, dehydration, lack of food and rest, and nervous stress contribute at least as much to high altitude "deterioration" as does oxygen lack. Of all the factors contributing to success on so great a venture, morale, courage, team-work and faith far outweigh food, tents, clothing, porters, and plans. *Ch. S. H., M. D.*

THE ROYAL PEAKS OF RUWENZORI

By D. L. Busk

On April 20th 1888 the snows of Ruwenzori were seen for the first time by western eyes. Parke and Mounteney-Jephson of Stanley's expedition preceded their leader, who, however, claimed the credit for himself, when on May 24th he, too, saw mountains described by the natives as "covered with salt". These brief glimpses did no more than confirm the existence of the fabled Mountains of the Moon, first mentioned by Aristotle and later inscribed with astonishing accuracy on the maps of Greek and Arab geographers.

Despite several abortive attempts, eighteen years were to pass before that great mountaineer and explorer, the Duke of the Abruzzi, planning on his usual comprehensive scale, mounted an expedition that could almost be compared to a military operation, since apart from the European personnel no less than 220 porters were required from Entebbe. For the first time the glaciers were explored and the major summits surmounted, mapped and photographed. His expedition was at the time rightly held to be a model of organisation in exceptionally difficult country and weather conditions. Few who have visited the range now that it has been opened up will dispute this, and when the Duke lectured to the Royal Geographical Society at the Queen's Hall on January 12th, 1907, he was accorded a triumphal reception. The meeting was attended by His Majesty King Edward VII, Patron of the Society, who himself delivered a eulogy of the Duke's attainments.

So far-reaching were the results that interest was to some extent lost. The feeling arose that nothing more remained to be done, and it was not until 20 years later that the highest summit, Margherita Peak, was revisited by Dr. Noel Humphreys. A similar fate befell the much more accessible Mount Kenya, first ascended by Sir Halford Mackinder in 1899, but only climbed for the second time by Shipton and Wyn Harris in 1929. In rapidly developing countries every effort must be devoted to material progress and no energy can be spared for non-essential exploration. By the early thirties, however, the time was ripe for further journeys. Shipton and Tilman visited Ruwenzori, and Humphreys conducted his amazing series of little-publicized expeditions. It is regrettable that these are not better known, for they required rare courage and endurance. It is, for instance, doubtful whether many men would have displayed the fortitude and persistence

of Humphreys, who, when he fell into a crevasse and broke his arm, set the fracture and far from abandoning the climb instructed his companion, who had never been on a rope before, how to cut steps up an ice slope to the summit.

In the same year (1932) the first major expedition came from the west under the leadership of Count Xavier de Grunne. New routes were made to the great peaks of the Stanley group and much invaluable information was gained about the complicated lower slopes on the Congo side. By now the maps of the range could be presumed to have reached a stage of accuracy and all the major summits, and many minor ones, had apparently been climbed.

There was no further great activity before the war, but after it the Mountain Club of Uganda, aided financially and practically by the Government of the Protectorate, decided to make the range more easily accessible. Earlier explorers had had to face precipitous, trackless slopes, stinking quagmires in which they risked sinking to the knee at every stride and long periods when heavy rain or dense mist rendered progress impossible and even mere existence intolerable in sodden tents or under draughty rocks. The weather could not be remedied, but it was decided to cut trails and to erect prefabricated huts that would at least mitigate the discomforts of an area, about which one of the earlier visitors has remarked that it rained 366 days every year and 367 in leap years. During six expeditions Humphreys had only one day without rain.

The labour involved was immense and anyone who now visits Ruwenzori will be filled with gratitude to the members of the Club. Unpaid and during leaves that might have been devoted to well-earned leisure, it was an admirable achievement to supervise the cutting of some twenty-five miles of track and the erection of three comfortable huts at convenient points in the Bujuku Valley, which is the shortest line of access to the peaks of the Stanley and Speke groups. Another hut has been established near the Kitandara Lakes, well situated for Mount Baker and the Luigi di Savoia group, and a small bivouac hut stands hard by the Elena Glacier at over 14,850 ft. (4530 m.). These are all constructed of corrugated aluminium, the welcome glint of which is a great relief to the weary and probably sodden traveller at day's end. It is noteworthy that much less attention is called to the vile weather of Ruwenzori since the erection of the huts. There is all the difference in the world between pitching a tent in a drenching mist and finding a waterproof hut with a stove over which clothes can be dried. Another hut has been set up at Bigo, roughly midway between Nyamleju and Bujuku Lake. This serves as a base for the two northern groups of mountains, Emin and Gessi.

All the huts, except as yet Bigo, are fully equipped with the necessities of life—stoves, bunks, cooking utensils, lamps, etc. In fact, were it not for the track, which it must be admitted is vile beyond compare, one could almost fancy oneself in the Alps. In thirty years of mountaineering I have never known more

tiresome going on what is called a trail. It gives one some idea of what was endured before it was cut. There is, however, the advantage that after three days in such conditions one's legs should be in pretty good shape when one reaches Bujuku.

During 1952 this area was the scene of intense activity. A large-scale expedition was investigating the geology and glaciology of the range, and many weeks were spent by its members at high altitudes. Markers, which climbers are urged not to remove, have been established on the glaciers, and rain gauges set up near the huts with less superfluous notices to the effect that porters should be prevented, if possible, from drinking the contents. Something important will no doubt in due course emerge from all this painstaking work, but the romance of the Mountains of the Moon remains unaffected and it seemed after much study of all the available maps and photographs that there was every justification for an unscientific trip to Ruwenzori. Striking discrepancies were revealed and while photographs cannot lie, though they often mislead, maps are often notoriously inaccurate. It seemed heresy to believe this, when such experts as the Duke, who had a team of surveyors, and Humphreys, had gone before, but their photographs gave the lie to their cartography.

What the photographs of 1906 and 1932 seemed to disclose was that the maps of the same years were in error in running the Savoia Glacier up to the Savoia Peak at the south end of the Stanley Group. There seemed to be a distinct gap, filled by a hanging glacier and overhung by at least two peaks. These must rise to over 16,000 ft. (4880 m.), though overshadowed by the neighbouring Savoia Peak (16,421 ft. = 5005 m.) climbed by the Duke in 1906.

Here was material enough on which to base a plan of campaign, and for many months, at long range, correspondence was exchanged with the Mountain Club (as accommodation is limited, the huts must be "booked") and with possible companions for the venture. The second half of January 1953 was chosen as a time when the weather was more likely than not to be at its poor best, and Arthur Firmin, one of Nairobi's most experienced mountaineers, consented to assist in exploring the problem. It remained to drive the long two thousand miles from Addis Abeba to Fort Portal at the foot of the mountains and to arrive on a date fixed six months ahead. An even more serious trial was to try to remember to bring all that would be necessary, not only for ordinary safari on the way south and for social life in Nairobi and Entebbe, but the essential mountaineering equipment and stores for a fortnight in the hills. Sixteen tiring days were required for the journey, for various business on the road and for the completion of preparations with the Mountain Club, whose Secretary had taken infinite pains to have all in readiness for an inexperienced visitor. By the evening of January 16th at Fort Portal all was arranged, and I had word from Firmin that he and his

companion, Pat Neylan, would await me at the highest (Bujuku) hut, to which they had preceded me by some days. Food for the porters was packed and I had been given the names of reliable headmen. This was important because I had no word of any common language. I was lucky enough to find at the roadhead at Ruboni that the man at the top of the list, Kuli Kisuke, was available. Together we selected eight stout porters and by noon on January 17th we were on the trail, after the usual distribution of one blanket and one sweater per man. These were produced by the Club, and I was surprised to find that the sweaters were black and white striped cotton creations. The porters were also surprised, because, judging by the difficulty they had in squeezing their massive torsos into them, they must have been the relic of some boys' hockey club. One gentleman, known to me as the Naked Savage, who was otherwise clad only in a piece of sacking round the loins and a bit of monkey fur round the neck, looked particularly picturesque in his constricting sweater, which reached half way down his ribs. He wore it continuously, except when it became really cold at night, when he carefully hung it on some convenient branch.

The porters swiftly made slings from the bark of banana trees and supported their loads entirely, as most heavy-weight carriers do all over the world, by a band across their foreheads. Shortly after the start there was a threatened strike, no doubt owing to weight of the loads, which were certainly well up to the statutory limit of 45 lb. For once the lack of a common language was a boon. The porters could not voice their complaints to me and I merely walked on, leaving it to Kuli Kisuke to cope. This he managed to do after much argument, and I had no further trouble, except in inducing a porter to make the long descent to the river at the first hut, where there is no water.

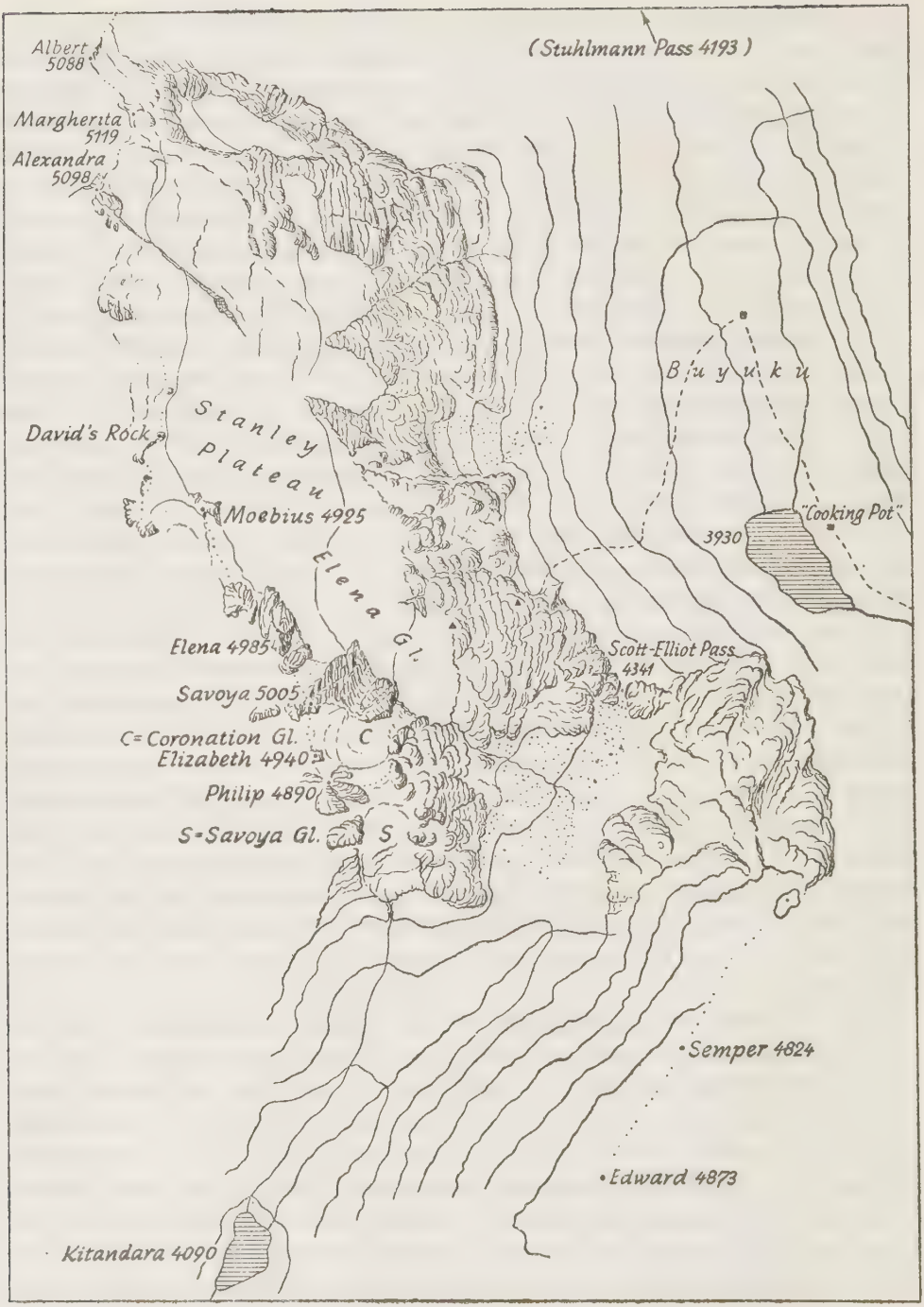
Thirteen days of driving is no preparation for serious mountaineering on the sort of tracks one finds on Ruwenzori. The route to the first hut at Nyinabitaba is brutally steep and involves a climb of some 3500 ft. (*c.* 1100 m.). The weather was perfect, which was something, but I was very glad when at last the hut appeared in sight. That evening there was a superb view of the Portal Peaks on the opposite side of the valley, rising 6000 ft. (1800 m.) above our standpoint. These fine rock summits obscure the view of the higher snows from the plains and are thus well-called, but actually they are named after the two brothers who did so much in the early days to open up what is now the western province of Uganda.

The two following days to the second and third huts were more interesting. The fantastic vegetation of Ruwenzori, of which so much has been written, began to appear. Everything grows on the most unaccustomed scale. We had already passed slopes of bracken 8 or 9 ft. high (2–3 m.); there followed bamboos and then the first of the tree heather, some as much as 40 ft. (10–15 m.) in height. In

one patch of woodland the trees, growing close together, were all draped in brown moss. One had the impression of the enchanted forest of a fairy tale and almost expected to hear the Seven Dwarfs come singing down the path. Higher up we encountered the towering lobelias and giant groundsel. Having always associated the latter with canaries, I was delighted to find a 15 ft. (5 m.) high variety more suitable for ostriches. Helichrysum, a sort of "everlasting" grew everywhere and was a serious bar to progress even on the track. The botanists, in their pedantic way, maintain that the name of this flower derives from the Greek *helix*, a screw, and *chrusos*, gold. This is, of course, nonsense. The origin is from a heartfelt sentence pronounced by one of the earlier visitors when forcing his way through a trackless entanglement of this bush. "Hell cry some", he said, "Others use stronger language." The most disagreable plant encountered was a singularly vicious nettle, compared with whose bite the sting of an English nettle is like an angel's kiss. I did not myself notice the most extraordinary example of exaggerated flora, but was told of it later by the President of the Mountain Club. When erecting the Kitandara hut, he found that one of the main beams had been broken during the porterage from the roadhead. He cut a suitable alternative out of the surrounding undergrowth and this, if you please, was a stem of the common St. John's Wort that adorns our own fields in miniature.

In perfect weather the Mobuku and Bujuku rivers were easy to ford and the track comparatively dry. Nevertheless there are stretches between the second and third huts that no man will forget. Here the ground is flat and swampy and from the evil-smelling ooze rise tussocks of wiry sedge grass some two feet high and perhaps a foot in diameter. After jumping from one to another of these quaking pillars for a quarter of a mile, acutely aware all the time of the unpleasant results of a misstep, one greets even a stretch of Helichrysum with enthusiasm. The footwork of the Bakonjo porters under their enormous loads was a delight to watch. They moved barefooted with the easy, dancing stride of the trained mountaineer, using a long staff more to balance with than as an actual prop. I was glad of my ice-axe; not even on glaciers have I found it more useful as a probe and support.

From the second hut at Nyamleju onwards (10,500 ft. = 3200 m.) we began to have glimpses of the snow peaks, rising magnificently against the cloudless sky. At Bujuku Lake the whole great cirque of the Baker, Stanley and Speke groups stood revealed above the sombre waters. Half an hour further on towards the Stuhlmann Pass lies the upper hut at about 13,000 ft. (3960 m.). A mixed South African-Belgian party was in residence, and it was pleasant to have some human companionship after the loneliness of the last three days with porters, with whom I could exchange no word. The porters retreated down to the old "Cooking Pot Cave" near Bujuku Lake. These overhanging rocks are a feature of the Ruwenzori


Albert 5088
(Stuhlmann Pass 4193)
Margherita 5119
Alexandra 5098
Stanley Plateau
David's Rock
Moebius 4925
Elena Gl.
Elena 4985
Savoya 5005
C = Coronation Gl.
Elizabeth 4940
C
Philip 4890
S = Savoya Gl.
S
Kitandara 4090
Buyuku
3930
"Cooking Pot"
Scott-Elliot Pass 4341
Semper 4824
Edward 4873

range and formed the only shelter for earlier and hardier visitors. The huts have been planned close to them, so that porters, too, may be under cover. At the Bujuku hut was a note from Firmin asking me to join him at Ridge Camp on the morrow. I would have given much for a day's rest, but such perfect weather was too good to last and on the fourth day from the roadhead I joined Firmin and Neylan at their camp, sending the porters back to Bujuku.

We were now at 14,850ft. (4530m.) on the site occupied by the Duke forty-seven years earlier. Twenty minutes further on, at the edge of the Elena Glacier, lay the new bivouac hut and above us towered the cliffs of Elena and Savoia and the hanging glacier I had come so far to explore. Somewhere behind this curtain of ice lay the two "unknown" peaks spotted from photographs. It was already clear that my surmise was correct. The Savoia Glacier did not, as marked on all the maps, abut against Savoia Peak. In between lay the glacier, only the falling tongue of which was visible. Higher must lie a basin of some kind and peaks surrounding it.

When the Duke made the first ascent of Savoia he descended by its south-east ridge, overlooking the upper basin of our glacier, and thence eastwards by a steep rock gully to the Elena Glacier. As he dismisses this in a sentence, I had hoped to find it easy, but it held far more snow than shown in the photographs of 1906. However, there seemed no other way. To the south of the gully was a precipitous pinnacle and then the unclimbable hanging glacier; to the north the steep face of Savoia. At 8.30 next morning, after a remarkably warm night (we experienced no more than eight degrees of frost at Ridge Camp), Firmin and I left camp, Neylan having decided that his exertions of the last few days entitled him to an off-day. We reached the foot of the gully in an hour. It looked uninviting and we embarked on it gingerly. In fact, it was worse than it looked, because the strata sloped the wrong way. From below ledges appeared to be plentiful, but on arrival each was found to slope downwards and to be covered by a layer of unstable snow. There was hardly a decent handhold on the whole climb, and we were reduced to the precarious kneeholds and body-sprawling detested by all mountaineers. The only relief was that ice-axe belays could usually be contrived. Firmin led throughout. As altitude was telling on me seriously, I finished every pitch panting as if I had run a four-minute mile. This necessitated short rests, which slowed us down, and it was nearly three hours before we cut up the final slope and emerged on the little col between the pinnacle and Savoia at about 15,600 ft. (4750 m.). The pinnacle, incidentally, proved a fraud. Imposing from below, it is in fact flat-topped, and Firmin walked up it in two minutes for a photograph.

Before us, as we had hoped, was the upper basin of the hanging glacier and across it lay the two "missing" peaks. We chose the more northerly and higher of the two and after a rest cut a way up a steep snow and ice wall, where crevasses and a bergschrund were troublesome, to the col between the peak and Savoia.

From here the peak was an easy scramble. In a few minutes we were on its commodious summit, which, if the height of Savoia is correct, appeared to be about 16,200 ft. (4940 m.). We built no cairn because no stones were conveniently available.

The southern peak is only slightly lower and presents a much more serious problem, since on both its northern and eastern ridges there are vertical steps heavily veneered with snow and ice. Perhaps the step on the eastern ridge could be followed to the south above the Savoia Glacier. We now realised that while the peak we had climbed was invisible from the Uganda side, the southerly one could be seen above the hanging glacier. There was also another peak, very readily accessible from the basin, which was separated from the pinnacle by the hanging glacier. This, too, is visible from Ridge Camp.

We returned to our col. While Firmin scrambled easily up Savoia Peak, I circled this summit on its west side and prospected a route down the north ridge leading to a great unnamed tooth and Elena Peak, for in its present condition we were reluctant to face that gully in reverse. Since such places are always much more dangerous on the descent, an alternative was preferable. We hoped to force a way down the north ridge of Savoia to the col at the south foot of the great tooth and thence to the right down an exceedingly steep snow and ice slope to the Elena Glacier.

For a few hundred feet the ridge was composed of easy rocks, but then it narrowed and became snowy. Prospecting further, I found that though we were now only 50 ft. above the col there were two vertical steps and some crevasses across the ridge. Probably we ought to have tried a traverse lower down on the Congo side, but we did not wish to retrace our steps. We therefore put on crampons, and I had a look at the first vertical cut-off. This would have involved a nasty twisting jump downwards and sideways for about 7 ft., and when Firmin joined me he vetoed it. He then retired uphill to his belay abjuring me to do better. I worked down a sort of gutter filled with powder snow, which ended on the Uganda side in a vertical wall of ice 15 or 20 ft. high. This was quite impossible to descend normally, but at the bottom of it we should be at the head of a steep snow and ice couloir leading to the Elena Glacier. We decided to sacrifice an ice-axe and to rope down the obstacle. Sound anchorage was found with difficulty, because much of the snow on the ridge was of the consistency of castor sugar and would not hold the axe. Firmin then secured me on the climbing rope for 60 ft., much of it in free air, until I could cut a platform in the ice for myself and another just above it for him. He then came neatly down the doubled rope, and mercifully it followed when we pulled cautiously and steadily on one end. The couloir was extremely steep, and for greater security with only one ice-axe between us we descended carefully face inwards. Four rope lengths

saw us to easy ground from which we could scramble quickly back to our camp. The climb was excellently varied and of high standard, keeping us in suspense until the last minute. Above all we had proved our contention that the map was wrong. We had now trodden the "new" glacier, climbed our peak and identified worthy objectives for those who would follow us. We were a cheerful group that night in camp, where we had been joined by two of the other party, who had meanwhile made an ascent of Speke. As the evening drew on, the blue and bronze haze from the plains, caused by countless fires lit by the natives to burn the grass before the rains, rose over the Portal Peaks and swept up the lower valleys. Only the higher summits remained limpid, while the great west face of Mount Baker opposite us glowed in the sunset above the Scott-Elliott Pass. We blessed the fine weather, so rare on Ruwenzori, that alone had permitted our gamble to succeed. In the usual mist we should have been quite unable to identify our objectives, let alone climb them.

Next day the weather still miraculously held. Firmin and Neylen had to hot-foot it back to Nairobi, and I decided to accompany them rather than stay on with the others. I really needed two more days' acclimatization before attempting anything serious at the business end of the rope, and the weather was unlikely to hold. In fact the clouds closed down behind us as we descended to the roadhead. We clambered down the steep descent to the Bujuku hut and after lunch left again for Nyamleju, which we reached at 6.30 p.m. I must confess to being pretty well played-out by the continuous efforts of the previous days, and I found the tussock-jumping and track-scrambling a sore trial. Even worse was the next day's descent of over 5000 ft. and perhaps ten miles of tortuous trail with many ups and downs. I do not think that on the whole trip from the roadhead to Ridge Camp there was more than half a mile of track, and never more than 20 yards at a time, when one did not need to look at every single foothold and be ready to correct one's balance with ice-axe or staff. Our porters positively ran down with neat, birdlike steps, never putting a foot wrong, but to tired men such conditions are a sore trial. It was noticeable that, owing to the vagaries of the track, our time going down the valley was not much faster than going up, though, of course, less fatiguing and demanding fewer halts, so that the overall time was considerably shorter. All three of us had had more than enough when we at last reached the car. It took an hour to load up and pay off the porters, and at dusk we reached Fort Portal clamouring for beer and even more necessary baths.

In distant Addis Abeba the idea of making by car a round-trip of over 4300 miles (7000 km.) to climb a mountain had seemed at times unreal. The journey back could now be faced with satisfaction. We had been so amazingly blessed by the weather that the whole programme had gone like clockwork in the minimum possible time. The long miles still ahead did not seem to matter. Only later did I

feel a vague regret that I had experienced no rain at all. It seemed like cheating, not to have trodden that nightmare track in its usual vile state; it was a pity not to have seen the Bakonjo porter at his best, lighting a fire in a downpour under a slightly overhanging boulder with soaking wood from smouldering tinder wrapped in a damp banana leaf. At the time I said, and certainly felt, that I was getting too old for serious high altitude mountaineering, but I suppose one day I ought to go back and see what Ruwenzori is really like, perhaps anyhow as far as the top hut.

When the Duke made his great expedition in 1906 vague native names existed for some peaks, but the higher slopes were uninhabited and unvisited even by hunters, so no local nomenclature was to be expected. He therefore had a clear field and named the six glaciated groups of the Ruwenzori range after eminent explorers: Mount Stanley, Mount Speke, Mount Baker, Mount Gessi, Mount Emin and Mount Thomson. The Royal Geographical Society subsequently disallowed the last name on the ground that Thomson had never visited the region and insisted that the Duke's own name be attached instead; so the sixth group became Mount Luigi di Savoia.

When it came to the individual peaks of each group, the Duke chose for the higher ones the names of members of the British and Italian royal families. Thus the culminating summit of Ruwenzori in the Stanley group is Margherita, closely followed by Alexandra, Elena and Savoia. The highest peak of Mount Speke is Vittorio Emanuele, of Mount Baker Edward, of Mount Gessi Yolanda and of Mount Emin Umberto. Other summits were named after eminent scientists or earlier explorers. The Belgian expedition of 1932 carried on the royal tradition. When they made the first ascent of the most northerly peak of the Stanley group, they gave it the name of that distinguished mountaineer King Albert. We suggest that this pleasant practice be continued and propose for the peak we climbed the name of *Elizabeth*, with *Philip* just to the south. This summit awaits its first visitors, and we hope that it will not be long before it is climbed by members of the Mountain Club of Uganda, perhaps up the untrodden Savoia Glacier from the Kitandara hut. We did not discover the peaks or the glacier—they have been visible to all comers for nearly fifty years—but they have so far been ignored on the maps. We suggest in this year the name Coronation for the glacier.

BAFFIN ISLAND EXPEDITION, 1953

Introduction by P. D. Baird

In 1952 the Arctic Institute approved my plans for a second expedition to Baffin for the following year and once again, as in 1950, we were honoured by the cooperation of the Swiss Foundation for Alpine Research. The district chosen this time was Cumberland Peninsula. I had, in fact, worked out the principle operating plan of the expedition while waiting out some stormy days on the Barnes Ice Cap in 1950.

The whole of Cumberland Peninsula, about equivalent in size to Switzerland, is extremely mountainous, sharp rock peaks and ice-capped plateaus rising to the general level of 2000 m. above the sea.

The region was first visited by John Davis in 1585 and some of the features he named still appear on the map. Nearly three hundred years elapsed before any white explorer penetrated its interior though the coasts became known to whalers, especially to Captain Penny who "rediscovered" Hogarth Sound (Cumberland Sound). Boas, the German anthropologist, spent the year 1883–4 in the area. He crossed Kingnait Pass, made a remarkably accurate map mainly from native report, and named the ice-covered mountain region to the west of Pangnirtung Pass the Penny Highland.

When the Hudson's Bay Company and the Royal Canadian Mounted Police established at Pangnirtung in the early 1920's, winter Patrols went through the Pass, gaining a healthy respect for its difficulties as a sledge route. So did the biologist J. Dewey Soper in 1924, who gave us the first detailed description of the route. Parties of the Geological Survey of Canada, under Weeks 1926–7 and Riley 1951, had examined the Cumberland Sound coast but the interior was largely a scientific blank.

Our expedition had the 1948 and 1949 air photographs available for study, but our knowledge of the altitudes was based on the official estimate of 2400–2600 m. for the Penny Ice Cap and several 2100 m. spot heights for mountains, together with Soper's report of a 400-m. altitude for the summit of the Pass.

In 1950 many of the most important results of the Arctic Institute's expedition were those in the field of glaciology, and as this subject had been given a high place in the general research aims of the Institute it seemed a logical step to

explore the other large ice area of Baffin Island which was known to be higher and believed to lie in an area of greater precipitation than that of the Barnes Ice Cap studied in 1950.

We planned to determine whether a firn area existed on the summit of the Penny Ice Cap and to examine the glacial regime there and at various points on a representative outflowing glacier. For logistic purposes Highway Glacier, leading to the centre of Pangnirtung Pass, was selected. Ice thickness and movement-rate studies were planned for this glacier. A geomorphological investigation of the whole pass area, where results of existing as well as past glacial processes could be seen together, was to be undertaken, as were studies on bergschrunds. The geology, botany, and zoology of the district were to be investigated according to the capacities and special interests of the selected scientists concerned.

Thirteen tons of expedition stores had been sent to Pangnirtung settlement by sea in 1952. Owing to the tragic loss of the Institute's Norseman aircraft in 1951, it was not possible to have the luxury of a plane available throughout the season, but a Norseman, chartered from Arctic Wings of Churchill, was used to establish the expedition in the field after the party and 4000 lb. of equipment had been kindly flown to Frobisher Bay by the Royal Canadian Air Force. The latter also assisted the expedition very materially towards the close of the expedition when a Canso of 408 Photo Survey Sqn., engaged in local Shoran operations, picked up the party of four men who had evacuated our ice cap station by a 45-km. sledge trip to tidewater, transferred them to the base camp and then took much heavy equipment from there out to the settlement at Pangnirtung.

The Norseman aircraft flew about sixty-five hours for the expedition, thirty of which were on the flight to and from its base at Churchill round Foxe Basin, fifteen ferrying the party in four loads from Frobisher to Pangnirtung, and twenty establishing the field camps and moving personnel out of Pangnirtung. Its local operations were all over on May 26th, and it was away from Churchill only three weeks altogether. Gunnar Ingebrigtson, our pilot, familiar with the northern Canadian tundra, but new to steep mountain country, deserves great praise for his excellent work. During their stay he and his mechanic, Dave Croal, were very much a part of the Expedition. I find it hard to express my gratitude to the members of the party for the way they all contributed to the success of the work. In particular I can look back with great pleasure on the days when I was with the Swiss contingent, days among some of the finest mountains I have seen, days which their account which follows will describe in detail.

Plate 33 : Colonel Baird tests the weight of the expedition's rubber boat rolled up for transport.

THE SEISMIC EXAMINATION OF GLACIERS

By Hans Röthlisberger

Geologists, soil investigators, botanists and zoologists, all unite in declaring that the Arctic is not just one huge ice desert. Nevertheless, both ice and snow even today play a great part in Polar exploration and it is the glaciologists who are principally associated with this problem. It is true that the most important problems of glaciological research can be solved much more readily in the mountains of more temperate regions, where glaciers can be reached more or less easily all the year round. For example, comfortable living conditions, laboratories as well as all technical aids can be obtained at the International Research Station on the Jungfraujoch and at the Federal Institute for Snow and Avalanche Research on the Weissfluhjoch. There are, however, a variety of problems which can only be tackled on expeditions, in spite of the difficulties involved. Occasionally a number of snow and ice formations depend upon the prevailing climatic conditions; for example, whether snowfall occurs mainly in summer or in winter, is of substantial importance. Glaciers, moreover, behave differently according to whether the main body of ice is at a temperature just at or a few degrees below freezing point. The first case occurs in the warmer glaciers of the Western Alps and the latter frequently in the colder glaciers of the Arctic. Another reason for studying Arctic glaciers lies in their size. Even the largest Swiss glaciers are surprisingly small when compared with the enormous ice streams found in many regions of the Arctic. The local climatic conditions surrounding such large areas of ice and the manner in which the area is covered by it, bearing in mind the configuration of the underlying ground, are questions which can only be answered on the spot. This also refers to the movement of the glacier concerned. Once these problems are solved, certain assumptions as to glaciation and possible future developments in given climatic conditions can be

Plate 34 : Top : Camp A 3 at "Konkordiaplatz" on the Highway Glacier. Bottom : The "sapper" explodes the charge by turning the handle of the contact apparatus.

Plate 35 : After turning the handle, the explosion throws up a cloud of snow and theshock which produces the sound waves is set off.

Plate 36 : Top : Connecting the microphone cables in front of the tent. Bottom : In the tent Röthlisberger examines a seismograph record which has just been developed.

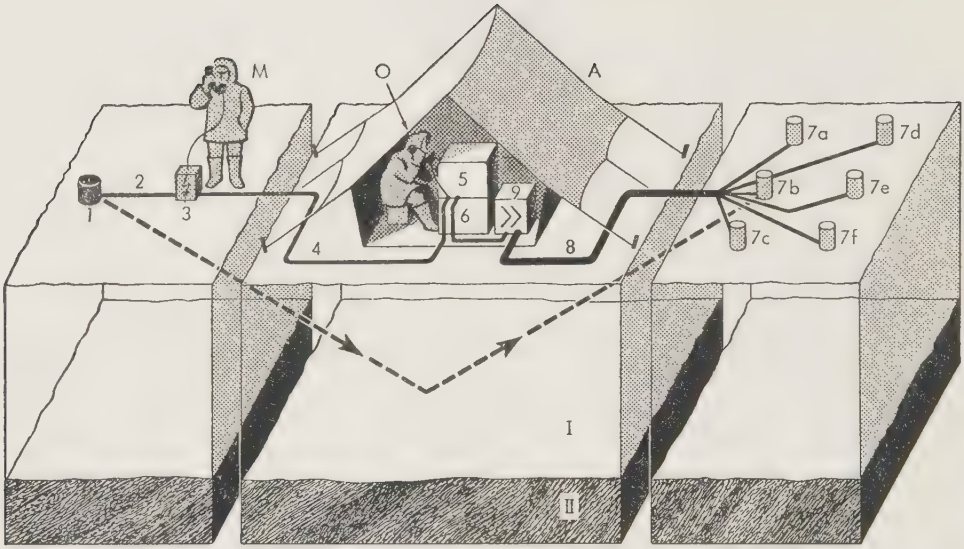


Fig. 1: 1. Explosive charge with electrical fuse. 2. Detonating cable (80 m., 265 ft.). 3. Exploder equipped with a telephone. 4. Telephone cable (500–1500 m., 1640–4920 ft.), also used for transmitting moment of detonation. 5. Recording apparatus with 16 mirror galvanometers and recording camera, also equipped with a telephone. 6. Dark room for developing and fixing. 7. Microphons for recording ground shocks. 8. Microphone cable (90–120 m., 295–395 ft.). 9. Amplifying equipment. A = equipment tent. O = operator. M = "sapper". I = ice. II = rock.

made, which may lead to a comprehensive appreciation of the ice age. An important basis for many such researches is a thorough knowledge of the ground underlying the ice cover. This can be determined by borings, but it is more simple to do it by seismographic recordings.

The most important seismic method can be compared to that of echo sounding on ships and is designated as reflection seismography. By means of an explosion shocks (sound waves) are transmitted through the glacier and, given favourable circumstances, an echo is received from the glacier bed. Conditions in ice are rather more complicated than in water, since several types of elastic waves are radiated, which does not happen in a liquid. One of the main objects of our Swiss party was to measure the thickness of a glacier at different places.

Figure 1 shows the seismic apparatus employed on the Cumberland Peninsula. The principal equipment consisted of accumulators and a generator with a petrol motor for charging as well as some measuring gear. The apparatus was altered to suit requirements by the Magnolia Petroleum Co. of Texas and presented to the Arctic Institute. Although it partly consisted of discarded equipment used for oil prospecting, practically no breakdowns occured, although it was some 1100 to 1500 lb. heavier than if it had been specially designed for our purpose. The

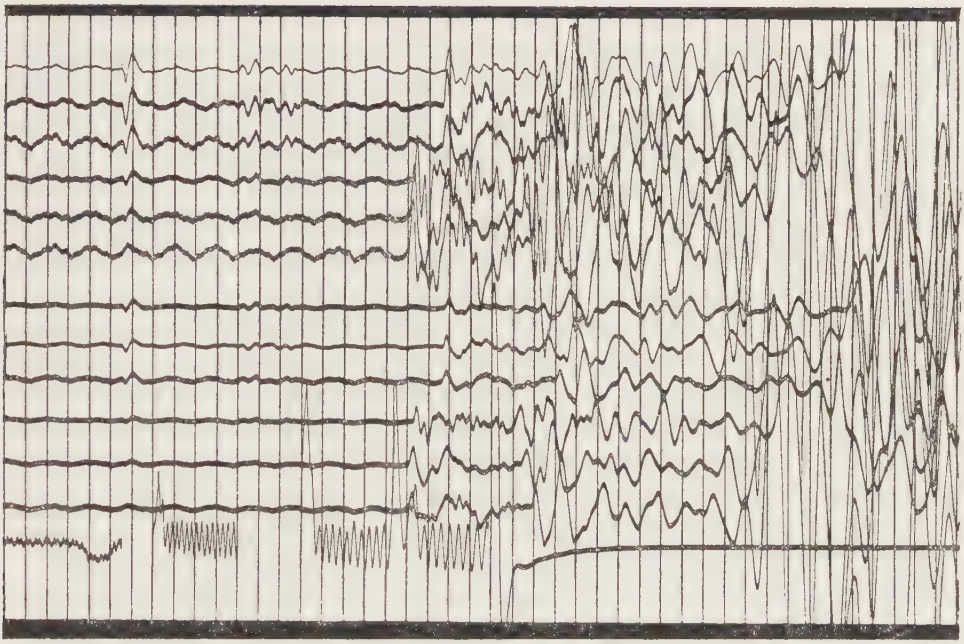


Fig. 2:

apparatus was so contrived that it could be operated by two men, the "sapper" operating the explosive charge, while the "operator" switched the amplifier and the registrating equipment on and off, at the same time seeing to the development of the registrating film. It was more suitable, however, to work with a crew of three or four men. The actual recording of the seismograph took only about a second. As soon as the two men had established telephonic communication and indicated that the charge and apparatus were ready, the "operator" set his camera going for one second. By counting over the telephone the "sapper" was nearly always able to set off the charge some tenths of a second after switching in the motor and the arrival of the sound wave from the ground was appropriately registered.

Figure 2 shows a typical seismograph record taken from the dark room by the operator after having been developed and fixed. The top twelve lines show from left to right how the six microphones were shaken in course of time; the bottom line indicates at "a" where it breaks off, the actual moment of the explosion. The first and second series of six lines record the vertical reverberation transmitted to the same six microphones with varying amplifications. This all happens very rapidly, only one hundredth of a second elapsing between two

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vertical lines. In the present case it has only taken about 13½ hundredths of a second (not quite $^1/_7$ of a second) for the shock waves to travel the 500 m. (1645 ft.) between the point of explosion and the three lower microphones (a–b). This corresponds to a speed of nearly 4 km. per sec. (2½ miles) whereas it is well known that sound waves only travel a distance of about 300 m. per sec. (985 ft.) in air. When the operator hears the explosion the recording has already finished. But the microphones also record the air shock, though much further along the film. The second series of three microphones (Nos. 7d, e, and f in Fig. 1) are 60 m. (200 ft.) further away from the point of explosion and receive the shock 1½ hundredths of a second later in consequence. The first shock fades away very rapidly but is followed up by several more sharp agitations. The spots where "something special occurs" are more or less clearly shown on the seismic records and are called "strikes". The first strike (b) is an integral part of the pressure wave which radiates from the charge (point of explosion) through the ice to the microphones, the second is a part of the reflection (echo) and the strike of the very sharp shocks indicates the arrival of shear waves and of certain other waves which run along the surface of the glacier.

The echo strike (reflection strike) is employed in order to determine the bed of the glacier. A single microphone would be sufficient if the glacier consisted of a uniformly thick flat slab like that shown in Figure 1. But one has often to cope with complicated conditions as is shown on the seismic record seen in Figure 2. While the direct wave is simultaneously received by the three microphones in series (No. 7a, b and c or d, e, and f in Fig. 1) the echo is returned at varying velocities. The echo strikes are obliquely and not vertically below one another and in this present case the series of microphones runs at an angle to the glacier, whereas the axis through the two centre microphones and the charge lies parallel to it. As the echo first reaches one of the outside microphones in both series, it must have arrived at an angle to the axis. Thus, the echo must have emanated not from the bed but from the side of the valley (only slightly inclined here), in other words, the apparatus was situated some distance away from the deepest part of the glacier. It is possible to determine the exact spot from whence the echo is returned. Where the ice is very thick the charge can be exploded quite close to the microphone and when the echo returns the surface will have quietened down enough for the strike to be plotted. This can only be done, however, if the ice cover can be measured in kilometres. In that case, the microphones must be situated far enough from the charge so that the "slow" shear and surface waves arrive there after the echo. This means that it will be necessary to use at least 1½ times as much cable as the glacier is thick.

The principle of seismic reflection is simple but a considerable amount of patience is often necessary to produce a good seismic record. The explosive

charge must be just right and to start with this required much experimental work. The film exposures were sometimes no good owing to the explosions being either too weak or too great. Charges of dynamite ranging from a few hundred grammes to over 1 kg. were placed on the ice and only in a few special cases were cartridges containing less than 100 g. inserted in short bore holes. There was plenty of explosive but little time for boring holes.

After the snow began to melt we were much troubled by many streams flowing over the glacier which caused registration of wide-spread shocks. Difficulties of this nature, however, did not have too much permanent effect. In one case a "glacier quake" shook the microphones a tenth of a second *before* the exposure, probably caused by the sudden opening of a crevasse nearby; on another occasion a glacier stream carried away 1000 ft. of cable. Such occurences, however, did not worry us too much; in fact they provided a little diversion. Our patience was tried much more by all that came before and after the "shooting" of seismic sections, such as rolling up and transporting the cable, the laborious packing of the sledges, drawing, pulling and pushing them, loading, unloading and reloading them and so on. More than a quarter of our time was taken up with transport and the days which this involved were neither short nor easy. I cannot help admiring my companions and the way in which they buckled down to the day's work, without ever having had previous experience of seismology. If they have achieved this today they are much more likely to remember it by muscular pain and sore backs than by their admiration for science which has made it possible to determine the bed of a glacier by means of elastic waves.

We four Swiss began our seismic work on May 27th, on a flat glacier pass at 6330 ft. to which we had been brought by the "Norseman" the week before, together with a ton or so of equipment. This spot was known as A 2 and would be recognised by members of a former Baird Expedition as Glacier Camp 2. We were "only" about 15 miles distant from A 1, the meteorological and glaciological Base Camp situated on the far side of an undulating glacier tableland. As we had experienced a couple of very fine days we expected an extensive view from A 2, and we were not disappointed. An immense sea of snow peaks and corniced ridges and steep cliffs flanking a maze of deep glacier valleys lay stretched out before us. (Plate 40.) But after days of alternating mist, snow and blizzard, we soon forgot this remarkable panorama. It did not snow very much, but nevertheless our two small Everest tents were crushed in by driving snow, as we had very foolishly pitched them in a slight hollow. Somewhat sobered by this experience we set to and dug them out, piling the snow as far away as possible. Up to June 5th we proceeded with our seismology as best we could with the temperature at −15° C. We were not able to record any echos, for the ice on the pass was not thick enough and the layer of névé on the ice had the effect of

damping the waves. However, by means of another seismic process we were able to establish that the pass was covered by about 200 m. (660 ft.) of ice and snow.

Our chief task was that of taking soundings of one of the large valley glaciers, which was later called Highway Glacier. It was about the size of the Aletsch Glacier but less crevassed.

Between July 6th and 11th we carried our ton of equipment over 6 miles, down the main branch of Highway Glacier from the pass to the east–south-east (centre of Plate 40) in order to start work at "Konkordiaplatz", the point where the glacier joins two others and turns south. We pitched Camp A 3 on a sunny moraine above "Konkordiaplatz" and lived there for almost a month. The tent stood at the foot of a prominent rock tower, safely situated between a gully prone to falling stones and the place where large icicles fell from the tower every morning. But it was the picturesque situation of A 3 rather than the initial fear of avalanches which impressed all our visitors and those passing from Base Camp to A 1. When the news of the sea of flowers surrounding the biologists' camp reached us, Schwarzenbach left but was replaced by the photographer John Thomson.

Later, Hans Weber also went over to the biologists' camp, in order to take shots of the white owl nests with his ciné-camera. The beginning of summer made

66°
65°
0 5 10 20 30 km
0 5 10 15 20 miles
Maktak Fjord
Coronation Fjord
North Pangnirtung Fjord
PENNY HIGHLAND
67°
South Pangnirtung Fjord
Pangnirtung
Cumberland Sound
Kingnait Fjord

itself felt at "Konkordiaplatz" principally by wet feet and also frozen cables in the early morning hours. We remained at A 3 until July 7th and then, owing to the bad condition of the snow, moved the equipment a little lower down Highway Glacier. It was now high time to break off our work and resume it in August, when the ice would be free from snow. We continued sounding at various points of the lower Highway Glacier from July 29th to August 9th, and on August 13th we loaded it all into a R.C.A.F. flying-boat on Summit Lake, everybody at Base Camp having been pressed into service. The rubber dinghy shown in Plate 33 was leaky but was made to float again with the help of three air mattresses.

The results of all our tests demanded protracted evaluation. Broadly speaking, we had established that the Highway Glacier was 400 m. (1310 ft.) thick at "Konkordiaplatz" and decreased in thickness uniformly towards the tongue. Its cross section was not symetrical with the channel to the west of the centre of the valley. No definite basin was found below "Konkordiaplatz", as is often the case in the Alps where large existing glaciers join up with vanished glaciers of the ice age, e. g., below the "Konkordiaplatz" of the Jungfrau region. It appeared, moreover, that the tongue which reached the valley of the Pangnirtung Pass lies on top of a thick mass of detritus probably extending right over the pass itself. This conclusion is of great importance for the morphologists whose job it was to examine the history of the origin of the Pangnirtung Pass from the North to the South Pangnirtung Fjord. The results achieved by all members in their different scientific spheres were exploited to the full, thanks to the excellent international collaboration which existed during the course of the expedition. The English glaciologist, W. H. Ward, determined the ablation of the Highway Glacier, the temperature of the ice in the bore holes and the rate of flow of the glacier. This in conjunction with the thickness of the ice itself allows conclusions to be drawn concerning the temperature on the glacier bed and also the mechanical behaviour of the ice.

CUMBERLAND—A PARADISE FOR CLIMBERS

By Jürg Marmet

Early on the morning of May 25th, 1953, Col. P. D. Baird left Pangnirtung with three comrades, including myself, on a reconnaissance flight over the proposed expedition terrain.

Thick banks of cloud festooned the mountains from top to bottom. Soon the ice of the fjord was visible below, shining between black shores. We received a radio report of cloudless weather from one of our high camps, which had been established on the highest dome of the ice cap on May 16th. Both pilots took their aircraft up a little, right through the thick cloud; we could scarcely see anything below at all.

Suddenly came a break; it grew clear overhead, with blue sky, while below us stretched an unbroken sea of cloud. Far away on the horizon, hardly distinguishable from the snow white cloud banks, lay the far-stretched pattern of the ice cap.

Mountains now appeared, some bearing astonishing similarity to well-known peaks at home, others unlike any we had ever seen before. A few moments later we found ourselves in the centre of a magnificent world of mountains. Dazzled by the light reflected from the glaciers and névés, we peered through the tiny windows of our aircraft. The innumerable peaks and ridges below looked like skeletons in the midst of the snow plain, nearly all of them having perpendicular walls. Twice we flew over a vertical granite precipice about 1300 ft. high and only about 300 ft. wide at the base, which separated two enormous glacier basins. Two peaks plastered with ice stood one at each end of the wall and must have been among the highest summits in the whole mountainous zone.

To the south a large mountain, seemingly of volcanic origin, towered out of the cloud bank. Mount Queen Elizabeth stood majestically above all its neighbours; this was the second highest summit of Baffinland, but only by 60 ft.

We then circled a gigantic rock tower with flanks over 3000 ft. high. This peak had attracted the attention of all pilots for a long time, but it was reserved for us to name it and later to climb it: Mount Asgard (The Throne of the Gods); like most high peaks, its rocky summit had a thickly iced dome.

Close to Asgard, a rock precipice of 2300 ft. reared up into the sky, the upper 1000 to 1300 ft. of which were overhanging and culminated in a leaning spire.

Compare also maps on p. 154/155.

This mountainous terrain, over part of which we were now flying, extends from north to south right through the length of Baffinland and dips down into the sea at the Cumberland Peninsula. The range flattens out towards the west

and terminates in a plain full of large lakes and swamps. The ice-free rocks are mostly akin to granite and possess the same advantages and disadvantages which we know so well in the Mont Blanc region and in Switzerland. Climbing in the Arctic differs little from that in the Alps, as technique and choice of routes remain virtually the same. The Arctic, however, has two main advantages. Firstly the sun shines twenty-four hours a day, and what that means any climber who has been caught out by nightfall can visualise. Secondly one climbs alone, and there is absolutely nobody else around to knock stones down on one; the faces and ridges are free from swear words so prevalent on our own mountains! No tins or other rubbish litter the summits and, Heaven be praised, the know-all and loud-mouthed mountain heroes so often encountered in the Alps simply do not exist.

During the summer, eight peaks were climbed by the expedition and, as a Swiss mountain guide, I was able to participate in all ascents.

The highest peak, the Tête Blanche, 7074 ft., was climbed by Röthlisberger, Weber, and myself on June 29th. All four Swiss, including Schwarzenbach, ascended Mount Asgard, 6598 ft., on June 13th. This impressive rock tower proved very difficult and was only finally conquered by artificial means. Accompanied by the expedition's leader, Col. P. D. Baird, we ascended Mount Queen Elizabeth, 7014 ft., the second highest and most beautiful peak in the area.

The viewpoint immediately above our Base Camp was climbed by practically all expedition members. This peak, 4422 ft. high, was named by us Mount Battle in memory of Ben Battle, our comrade who died near Base Camp on July 13th and whose grave lies at its foot.

Röthlisberger, Weber and I climbed a high rock peak on June 27th, overlooking Camp A 3 which afforded a complete survey of the Highway Glacier from the ice cap down to its tongue. On August 5th I climbed alone a peak of striking appearance about 6824 ft. lying to the east of Camp A 3, which dominated the northern termination of the South Pangnirtung Valley. Two further mountains were climbed, not for mountaineering but for technical reasons; Weber climbed a snow peak of about 6900 ft. east of Camp A 2 in order to film the midnight sun, and I went up a snow hump of about 6950 ft. south of A 2 for triangulation purposes.

Tête Blanche, 7074 ft.

The highest summit of the expedition area, and indeed of all of Baffinland, bore the name of Tête Blanche. This name was not just haphazard; it described a large dome, tapering off towards the east into a glacier flowing far down into the valley, while to the south and north steep rock walls rose for about 2000 ft., forming a fine arête at their point of juncture. It was this arête which attracted the Swiss members of the party even before we knew that the Tête Blanche was

the highest mountain. However, when at last the sun dispersed the clouds, we found that we had no time left to climb it.

It was not until the end of June, when the melting snow made seismic work in the valleys difficult, that we were able to make our plan. A surveying trip on one of the mountains adjacent to the Tête Blanche enabled us to get a good look at the proposed route of ascent and we finally started off on June 29th, 1953.

Röthlisberger, Weber and I put on summer ski at 2 a. m., crossed the Highway Glacier and turned off into a small side valley. Two and a half hours later we stood on a wide saddle and then crossed ice domes and snow bridges to the foot of the arête leading to the summit. Weber and Röthlisberger were filming from time to time, while I vainly shook my defective camera and hoped for a miracle!

We continued upwards until stopped by a steep rise in the ridge. We were in luck, however, for snow and ice conditions were extremely favourable and enabled us to overcome the obstacle without too much step cutting. The ridge now led straight towards the top. We had only a few rocks to clamber over before we trod the great ice dome, the highest point of which we reached at noon.

The air was clear and the view apparently limitless. A few clouds were visible to the south and, while I was busy with my surveying, they rapidly approached and it began to snow. We left the summit hurridly, ran along the ridge and felt our way back through thick cloud to the saddle. The snow became thicker and finally turned to rain, so that we frequently sank up to our knees even with ski. At last we got back to camp at 7 p. m., worn out but satisfied and happy.

Mount Asgard, 6598 ft.

In the 48th *Annual Report* of the Akademischer Alpenklub Bern, Röthlisberger writes as follows: "Among the outstanding peaks Mount Asgard held indisputably the first place. This isolated rock tower had been observed for a long time by all pilots who had flown over the region and had also been the subject of reports by white travellers crossing the Pangnirtung Pass with dog sledges. Precipices 1000 m. high, incredibly smooth and steep guard it on three sides culminating in a summit plateau 50 to 100 m. wide. On the fourth side, Asgard connects with the next peak, but even here the arête dropped 150 m. almost vertically to a gap. If it had not been for its reputation and isolated position, we would probably not have attempted its ascent. From the very first moment of the inception of the

Plate 37 : In the foreground is seen the granite peak of Mount Asgard, 2011 m. (6595 ft.). Behind are unknown mountains to the east of the south Pangnirtung Valley, seen from the north-west.

Plate 38 : Telephoto of Mount Asgard from the end of the Highway Glacier. The start of the climb was down in the valley behind the mountain.

Plate 39 : On the summit wall of Mount Asgard, looking west. Weber starts up the top chimney.

plan to climb it our feelings about it were in a perpetual state of change; possible—impossible—possible and so on. In this state of indecision we inspected the mountain from the air and still debated whether to go or not while for hours we crossed the glacier towards it."

On July 13th we determined to have a crack at it and left our Base Camp at 2.30 a. m. There was not much choice of route, in fact only one way held any possibility of success and if this did not go, then that was that. We worked our way forwards through icefalls, over rock ribs and snow fields until directly below the gap where a vertical and in places slightly overhanging pitch blocked our way, forcing us to traverse out across the face. Water was dripping everywhere, collecting in cracks and vegetation and splashing over protruding ledges into the depths. Eventually we were able to utilise cracks and ledges and so reach the arête and over this down into the gap.

A route description of the Salbitschyn in the old *Urner Führer* reads as follows: "Here the climb commences in earnest." This laconic remark came to mind as we inspected the pitch ahead and remained with us right to the summit. There followed a succession of narrow cracks, almost holdless chimneys, overhangs and slabs, all streaming with water. Fortunately we were able to take a breather after each pitch on horizontal ledges that provided good belays, otherwise we would have had to use considerably more pitons. A great and quite unexpected surprise awaited us just before reaching the summit plateau. A young stream was falling down the only way of approach, a short and steep chimney, finally falling in one huge leap 2600 ft. vertically down the west face. There was no other route and we had to go on. By means of a piton and attached foot sling, driven in, in dense spray, we made rapid progress and at last at 6 p. m. we stood on the summit.

Full of joy we looked down at the base camp, little knowing that at this precise moment one of our English comrades was about to breathe his last. We had no need to fear the advent of nightfall and quite unhurriedly we roped down the face by the way we had come up. As we got back to camp twenty-six hours after we had set out, we looked back at our mountain glowing red in the light of a new day.

Mount Queen, 7014 ft.

If you want to confirm air photographs and find that they do not appear to match up, the best method is then to look for features prominent in all the photos. This is an old and well tried rule. Usually, however, it is not as easy a task as was the case with the air photographs of the Cumberland Peninsula, for again and again

Plate 40 : Top : Air photo of the Highway Glacier from the west. Bottom : View from Base Camp of the Turner Glacier. The route up Mount Asgard led up this glacier.

one mountain kept cropping up, which was superior in shape, position and height to all others, namely Mount Queen. It is therefore not to be wondered at that Col. Baird, the expedition leader, had for years had this mountain on his list for climbing.

We Swiss had also been busy with plans from the beginning, and as we circled it in the plane for the first time it was the unanimous wish of us all to stand upon its ice dome. Unfortunately, not all of us were able to do so, and the few who did could only do so at the last moment. We proposed to interrupt our work for a week in July in order to attack the peak from a high camp. As a start, a food dump was established at 4700 ft. on the glacier plateau from whence we proposed to attempt the impressive north-west arête. In glorious weather Col. Baird, Röthlisberger, Weber and I went up to the dump on a very hot day in July. The weather changed suddenly during the night, however, and for five days all that could be seen was mist, snow and rain. Eventually we got fed up with this and returned to our base. This was only a postponement and we were in the meantime able to take up once more our scientific work which occupied us until the time came to break up our base camp. As a last resort we were forced to make the attack while transport of our Base Camp equipment to South Pangnirtung Fjord was being carried out. August 24th and 25th were set aside for the attack, if the weather was good, all would be well; if rain or snow supervened, then it would have to be called off.

Our luck held. It rained or snowed almost without intermission during the week ending August 24th, but on the morning of that day the clouds broke and we were able to see with our fieldglasses that the mountain was fairly free from snow. Col. Baird and I left Base Camp for the last time, very heavily laden. We were carrying part of the camp equipment as well as our personal baggage and climbing gear. It was our intention to try a steep couloir running up the east face. When we had reached the steep névé below the summit, we did not anticipate any more difficulties, but nobody as yet had had a chance to make a preliminary reconnaissance so high. Before we even got to the foot of the couloir our enormous sacks literally pressed us into the soft moss underfoot and we were obliged to make an early camp as we did not want to become unduly tired.

The next day was as beautiful as its predecessor, and full of excitement, as is always the case with a first ascent, we raced up the couloir to a narrow saddle. A short descent, a long traverse across scree-covered ledges and the way stood clear before us. Cutting steps, we climbed up the névé to the rocks of the summit arête, and after some pleasant scrambling soon reached the top. We had only taken six hours to accomplish the 6500 ft. from the bottom of the face.

The air was extraordinarily clear and the view ranged over the whole of the expedition's terrain. Icebergs glistened far away in the Cumberland Sound and the ice-crowned peaks greeted us for the last time.

A BOTANIST IN ARCTIC MOUNTAINS

By F. H. Schwarzenbach

Searching for flowers in the icy deserts of Polar mountains, would, at first sight, appear to be a somewhat unusual occupation. Even in more moderate latitudes men going about with little green botanical specimen boxes and going into raptures over some inconspicuous weed often met with lack of comprehension and much head-shaking. Thus it would appear to be somewhat ambitious to endeavour to gratify one's passion for the botanical art in those regions of the globe where winter night reigns for weeks on end, wild snow storms rage over the ice and even in mid-summer the low sun sends deep shadows over the landscape. Enough however; if Arctic botany does not produce epoch-making discoveries, at least it contributes its mite to the great scientific mosaic of Polar regions.

There are still many gaps in our knowledge of the Arctic plant world. It is true that our inventory of mosses, ferns, plants and grasses, is reasonably comprehensive. We know, for example, that north of the Arctic Circle there exist some three hundred varieties of blooming flowers, also that this number decreases in proportion as we go northwards, but that flowers are found blossoming in the region of the North Pole, wherever there is a piece of ice-free ground. When, however, we attempt to come to close grips with botanical problems, we immediately come up against difficulties. The first task of all, that of tabulating or cataloging existing plants, has its snags. Although at first glance it would appear to be a simple matter to learn off the hundred or so varieties which are to be found in the Arctic during the summer, it is often very difficult to put a name to them all. It is by no means rare to find two or three names for the same plant in a herbalist manual. There are reasons for this, however. Too often in the past, when very little was known about Arctic botany, collectors were apt to give names of Alpine or Scandinavian origin to their discoveries or even of those emanating from the American Rocky Mountains. The further that Arctic exploration advanced, however, it became clearer that despite a superficial similarity with plant types of more moderate climes, Polar plants had their own special characteristics. Certain species were found to have developed over the centuries in isolated spots often separated one from the other by enormous distances and it was difficult to align them in any set pattern for classification

purposes. Perhaps three or four characteristics might indicate quite distinctly a specific type of plant, whereas a difference in the hairiness or a pecularity in the branching out of the stems could mean the exact opposite. In order to make a decision on a point like this, experience would be the determining factor. A sure and definite opinion on such a matter could only be given after having compared botanical specimens from the most diverse parts of the Arctic and by means of work in the field carried out in areas extending right round the Pole. Much tiresome work is necessary, either in wading through catalogues or files in the Arctic sections of botanical museums or in the field, such as the collection and pressing of plants, and describing, photographing and sketching typical characteristics. More than often, work in the field is impeded by all sorts of setbacks. The föhn may suddenly tear the blotting paper out of the press as the specimens are being put in, or on outings of many days duration, space forbids the inclusion of bulky equipment such as an herbarium, or an involuntary dip in a stream swollen by melting snow turns dry plants gathered in sand dunes into water plants! The short and violent blasts emanating from a valley wind can make photographic close-ups of plants extremely tricky and a thick swarm of blood-sucking mosquitos are not conducive to delicate work with lens and tweezers, as one is forced to don gloves, thereby limiting work to large-scale sketching. A summer snowfall may force the botanist to take a holiday unless he wishes to buckle to with avalanche shovel and dig for his plants.

The collection and definition of plants is, however, only part of the botanist's labours. It is true that these tasks form the framework for all other investigations, but to-day botanical research treads other paths. The analysis of Arctic plant specimens has widened out to a huge field of activity. All sources of origin of any one specimen are entered on a list, compared with one another and discussed. At first it is rather heavy going to have to classify Arctic plants according to their dissemination and to determine that perhaps certain species are prevalent all over the Polar regions, whereas some only flourish in the West American Arctic and again others in a few widely separated regions of the Rocky Mountains. This card indexing, on the other hand, supplies the key to the far more interesting domain of the history of plants. The dissemination of a plant species is not fortuitous. The species originated long ago within a strictly limited territory, gradually extending until it occupied the area it does to-day. The botanist can read from the card index the history of its dissemination, which accurately reflects changes in the landscape or a reversal of climatic conditions. Thus, plants like the White Dryas *(Dryas octopetala)* are found both in the Alps and European Arctic regions, but not in intermediate countries. The botanist assumes that this species took root during the last ice age in the ice-free territory situated between the Scandinavian ice sheet and the tongues of the large Alpine glaciers. With the

arrival of a more temperate climate, the North European ice cap retreated towards the Polar Circle and the Alpine glaciers melted away. The White Dryas followed this climatic withdrawal in both directions, but was displaced by rival plants in the warmer lowlands, so that to-day the card index shows a huge gap between the Alps and the Far North.

Based on these analyses it can be proved that a whole series of Arctic regions underwent a long period of more favourable climatic conditions not so very long ago, geologically speaking. At that time a number of heat-loving plants migrated to the North; the ensuing cold period obliterated most of the flowering zones of the species, so that only a few remained in certain spots enjoying more favourable climatic conditions, thus bearing witness to the past warm period.

Another wide field of botanical research is covered by the foreign word "Oecology", to which belongs investigation into the reaction of plants to the extreme climatic conditions obtaining in the Arctic. The Polar summer is very short indeed, the average daily temperature only rising above freezing point for a few weeks, thereby enabling plants to grow and bloom. Only one type is able to complete its whole cycle of life within this short space of time, germinating from the seed and itself producing seed again. Its name is *Koenigia islandica*, a tiny plant only a few millimetres long, having a pair of dainty leaves and a single bud without leaves to the flowers and often consisting only of a single stamen or a seed bud. Seeds of some other species, such as the Arctic eyebright *(Euphrasia latifolia)*, germinate in the autumn, pass the winter as small germinal plants and flower in the following summer. A small dwarf gentian behaves in like manner *(Gentiana tenella)*, hardly attains the height of a match stick and is not easily seen, owing to its unobtrusive pale blue colour. Most species bloom for the first time several summers later, many of the small rosette plants such as the corn marigold *(Draba)* need from four to five periods of vegetation before they are strong enough to bring forth their white or yellow blooms. If one attempts to discover the age of dwarf bushes or creeping trellised willows, quite astonishingly high figures will be found. Polar willows, with stems as thick as a thumb are often about fifty years old; the annual rings lie very close together and the sections only disclose their secrets to the searching eye of a strong lens. Good summers produce thick rings and only narrow ones occur in unfavourable years.

Under Arctic conditions, minimum differences in the configuration of the ground, the snow cover, protection against wind and exposure have a remarkable effect. The plants vegetate well down to the limit of existence under the pressure of the extreme conditions obtaining here and a minute change in their condition is sufficient to extinguish life altogether. This dependance upon the microscopical changes in climate and ground conditions which can take place with a radius of ·20 cm. (8 in.) around the plant, is one of the most outstanding features in the

Arctic plant world. Of two poppy plants *(Papaver radicatum)* growing about 25 cm. (10 in.) apart, one flowered two weeks later than the other, all because a stone the size of a man's head threw its shadow for two or three hours every day on the other plant. *Silene acaulis* often grows on old gravelly terraces and forms small and large semi-globular cushions about 30 cm. (12 in.) in diameter which, during the time of flowering, are thickly studded with violet stars. The blossoms open first of all on the south side of the cushion and a week later they extend to the centre and about ten days later go right over to the side opposed to the sun. As the last blossoms are coming out on the shady side of the cushion, the seeds are already ripening on the south side. Thus the Polar explorer can almost use the blooms of the *Silene acaulis* as a compass.

It was due to these microscopic conditions that a single saxifrage *(Saxifraga cernua)* was able to take root 7250 ft. up on the summit ridge of Elisabethstinde in East Greenland. This spot was hundreds of feet above the névés of the Skjoldungebrae; a little sand drifting into a crevice, warm rocks trapping the sun's rays and storing up the heat as in an incubator, a little water coming from a strip of old snow, all these factors contributed towards the germination of a stray bud, blossoming forth into a fine plant.

The Arctic plants assure their propagation in manifold ways. Pollen-carrying insects are rare, and flowering time is so short that a single onset of bad weather is enough to ruin the fertilisation. There are many ways of getting over these setbacks. For example, a species of saxifrage *(Saxifraga flagellaris)*, which only grows in the Far North, develops runners like our own indigenous strawberry; another one *(Saxifraga cernua)* bears small red buds at the shoulder of its leaves, which fall off and grow into new plants. This type usually forms a single white blossom which is barren. Various grasses multiply by means of small shoots which form in place of the blooms and after some time break away from the parent plant. Another group of plants assures the deposition of seeds by self-pollenisation. Other species are able to produce seeds without any fertilisation.

The unbroken daylight during the Polar summer has a beneficial effect upon plants. The further north one goes, the longer the midnight sun remains above the horizon and in the most northerly provinces of Greenland daylight lasts for more than four months at a time. This permanent daylight in Arctic regions is the cause of unusual propagation by means of shoots in the case of panicle grass *(Poa alpina vivipara)*; tiny grass plants appear in place of blossoms which fall to the ground and take root. If this grass is transplanted in the Alps it produces blossoms and seed in spring and autumn and only reverts to its northern behaviour during the period of the shortest nights.

Oecology provides the botanist with the means to study neighbouring spheres of knowledge. Observations in the field enable the botanist to attach a

label to every species of plant, giving information as to its source of origin. Such a label might read as follows:

"Round-leafed bluebell *(Campanula rotundifolia)*. Prefers acid ground. Situated on south-facing dry slopes with low snow cover. Frequently appears in rock crevices and in stony places. Offers little competition to humus-forming species. Upper limit in Baffinland about 3000 ft. below vegetation zone. Often grows together with: arnica *(Arnica alpina)*, cat's foot *(Antennaria species)* and fescue-grass *(Festuca brachyphylla)*."

A short description such as the above forms the basis for further investigations. A bunch of flowers plucked in the Arctic provides much information concerning its source of origin. It is possible from this to estimate the amount of winter snow cover or the type of underlying rock; in fact one can arrive at a fairly accurate estimate of the depth at which the ground is permanently frozen even in summer. If the botanist knows the exact source of origin of the specimen, it is a simple matter to determine the limit of vegetation even on the other side of the valley. If the height of the névé above sea level can be ascertained from air photographs and if the geology of the district is known, it is possible to predict the types of plants likely to be expected in the terrain, or how many species are likely to thrive at sea level.

Plants are grouped together, and in the Arctic as in every part of the globe, have, so to speak, their own particular trade-mark. These groups vary according to the source of origin; for example a swamp differs radically from a damp heath, a group found in a snow valley is very different from that found on south-facing slopes. As, however, the same types of plants are invariably found in the same regions, conclusions can be drawn from them providing information concerning ground conditions and climatic behaviour.

The development of a group of plants extends over a series of intermediate steps, which alternate until a final state of equilibrium is attained. As the human being grows old, certain definite stages of life succeed one another. It is the same with plants, for they too have their stages of infancy and adolescence. Each of these intermediate stages is of pre-determined length, the stage of development takes place according to natural law, in such a manner that it can almost be considered as a nature calendar as regards the fixing of the age of moraines, beach terraces, or landslides. For example, if part of a valley has become free of ice owing to the retreat of a glacier, it is immediately taken over by plants, and the stage of development and the age of the vegetation can be determined by the composition of the plant groups found there. Calculations obtained in this way are extremely reliable, but to our regret they only date back for a few hundred years or so. As, however, in Arctic regions, it is the more recent events which

set their stamp upon the landscape, these methods have a certain importance appertaining to them. The same technique can also be applied to determining the age of Eskimo ruins. Thus, the botanist can also be of assistance to the archæologist.

From time to time the botanist has to play the detective. The zoologist expects to learn from him an analysis of the parts of plants found in the crops and stomachs of birds as well as the identification of nesting materials, or he might be interested to receive information on the plant food most preferred by the lemmings. It is an endless puzzle to be able to determine plant species from seeds, remains of leaves or parts of stems, and the microscope frequently plays its part in deciding many problems. The distance apart of the leaf serrations, the number of veins or pecularities in the structure of the hairs, all these factors can provide a key to the problem. A definite result can only be arrived at beyond all possible doubt when the right specimen is selected out of all hundreds available, and even then luck plays a great part.

A snow bunting *(Plectrophena nivalis)* was found to contain the following parts of plants in its stomach: a leaf of the bog berry *(Vaccinium uliginosum)*, several pieces of leaf 2 or 3 mm. in diameter of the same species, leaves of peat moss and the end of a leaf of American White Dryas *(Dryas integrifolia)*.

The results of the analysis of the food remains in the lemming were remarkable. This small arctic vole, which strongly resembles the Alpine marmot, has a preference for leaves of grass. They were bitten off short and eaten from the bottom to the tip.

As will have been seen, the work of a botanist in the Arctic is full of interesting queries. Its particular charm lies in the fact that it is bound up with other methods of research and helps to solve problems of the most diverse branches of knowledge.

Plate 41 : Arctic bluebells (Campanula rotundifolia) bloom on sunny south slopes in mid-summer.
Double plate 42/43 : Pioneer plants of the Arctic mountains.
Plate 44 : Top : An Arctic dwarf pink (Melandrium apetalum) puts forth its ventriculous calyx. Close by, a sheaf of Luzula confusa. Bottom : The deep blue buds of the Campanula uniflora reveal their hidden beauty. These plants are found up to 1000 m. (3280 ft.) on southern rocky slopes.

Salix arctica

Epilobium latifolium

Melandrium affine

Papaver radicatum

Pyrola grandiflora

Cochlearia officinalis

Dryas octopetala

Cassiope tetragona

Pedicularis flammea

Epilobium latifolium

Salix arctica

Polygonum viviparum

THREE EXPLORATIONS IN NORTH-EAST GREENLAND

Introduction

The following three contributions are written by the Swiss participants in the Danish East Greenland Expedition 1953, once again under the leadership of Dr. Lauge Koch. Ever since 1926, the recurrent expeditions visiting East Greenland have been engaged in studying the geology, botany, zoology and archæology of East Greenland. These expeditions take us into different territories, where the working methods employed had to be adapted to the new circumstances.

The exploration undertaken by Prof. Dr. P. Bearth and Dr. J. Haller was in Central East Greenland in the vicinity of the great Kejser Franz Josephs Fjord. The Werner Mountains, a young volcanic range, are situated in that area close to the coast and the proximity of the sea has an unfavourable effect on the weather.

The Mount Shackleton trip describes the conditions obtaining at the edge of the ice cap, far removed from the influence of pack ice and fjords. Here the highest peaks of the Caledonian mountain chain, the last outpost, rose up out of the endless icy wastes.

The crossing of North Peary Land, however, took us 1100 km. (690 miles) further north, and resulted in the collating of the first scientific data ever to be obtained from these hitherto unknown mountains. Owing to the generous support of Dr. Lauge Koch, all the expeditions were successfully accomplished.

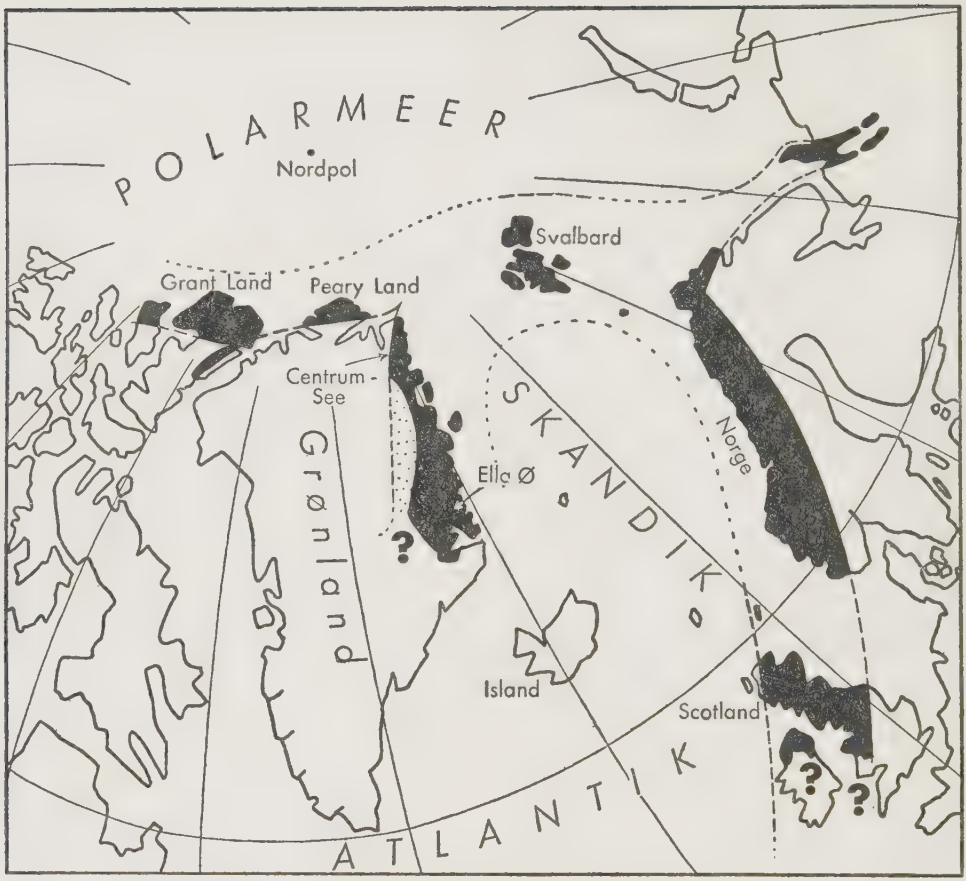
E. F.

ACROSS THE MOUNTAINS OF NORTH PEARY LAND

By Erdhart Fränkl (Basel)

Preface

I think that a short preface is necessary as I am a little hesitant to describe the journey to the most northerly cape in the world, undertaken by Fritz Müller (Zürich) and I. Many years experience of Greenland have taught me that it is extremely difficult to make a satisfactory report of events, either in writing or by word of mouth. Three elements predominate, the silence of nature, the spacious-



ness of the landscape, and the severity of the form. Everyone experiences these factors in his own way. To put this into words, however, is almost beyond the somewhat modest style of a simple geologist. The adventurous side recedes, for in making plans the scientific work is given prominence so that automatically routes are chosen which are safe to follow and free from danger.

The Journey

North Peary Land is a large peninsula, the most northerly part of Greenland and of the world. It is bounded on the South by the F. E. Hyde Fjord and its western prolongation, a deep valley leading to the Harder Fjord; the Polar Sea washes it on the North and East.

A wide mountain chain, 60 to 70 km. wide, runs through the entire land, which is somewhat reminiscent of the Alps and attains a height of about 6500 ft. All the valleys are glaciated, but there are large ice-free areas along the coast. Cape Morris Jessup, the most northerly cape in the world, projects into the Polar Sea from a soft, unglaciated, gently rolling country.

Cape Morris Jessup was discovered by R. E. Peary in 1900, when he was trying to penetrate to the North Pole along the coast of North-East Greenland, which however, he did not reach until 1909. Peary was quite aware of the easterly drift of the Polar ice and reckoned with the possibility that the sea currents from the direction of the Pole might drive him on to the North Greenland coast. He therefore decided to send his companions, MacMillan and Borup, along the coast with the object of establishing food dumps at various places, the most easterly of which was to be Cape Morris Jessup. This trip was extremely successful and they were lucky enough to shoot forty-three musk oxen at the Cape.

The later generation of Polar explorers after Peary, Knud Rasmussen and Mylius Erichsen, concentrated on more southerly objectives. Even so, the Danish national flag waved over Cape Morris Jessup in 1921, when Dr. Lauge Koch led the Danish Jubilee Expedition round North Greenland. He made very careful compilations of the exact geographical position of the Cape, which he found to be 83° 39′ N and 706 km. (440 miles) from the Pole. All three expeditions, Peary, MacMillan and Koch, took their dog sledges along the coast and avoided the mountainous area of the interior.

This chain of mountains is of great interest to geologists. The old folding zones of the Caledonian movement are found in Scotland, Norway, Spitzbergen, East Greenland and even in North Peary Land. Lauge Koch brought back with him the first evidence of the folding zone in North Greenland; its existence was already known, but its internal structure still remained as a blank spot on the geological map.

It was this blank spot which attracted me after I had investigated the structure of the Caledonian mountains in Central East Greenland (72°–74° N) in 1948–51 and in North-East Greenland (80°–81° N) in 1952. The idea of a summer crossing of North Peary Land came to me in November 1952, while studying air photographs which had been taken for surveying purposes. On one of the pictures of the South coast I noticed open water in a small secondary fjord (Friggs Fjord) of the main F. E. Hyde Fjord. This ice-free water was caused by a large river which flowed into the inner Friggs Fjord. Lauge Koch, during his flight over Peary Land in 1938, had already observed this inner fjord and had named it "Drivhuset" (hot-house). Because of the river that flowed into it and due its sheltered position, it was to be expected that open water would remain all through the summer and thus it might be possible to make a seaplane landing in Friggs Fjord.

Now began the period of technical problems and disappointments. The distance as the crow flies from our most northerly base on the Central Lake (80° N) to Friggs Fjord was 350–400 km. (220–250 miles), which meant that we must reckon with a flight of from 700–800 km. (450–500 miles). We had a single-engined Norseman plane and a flight of this distance was just about as much as it could do, so that we would be able to take along, in addition to the crew of 3 men, only a further 120 kg. (264 lb.), i. e. one man and 40 kg. (88 lb.) of equipment. On the other hand, had we had a Catalina, it would have been an easy matter to undertake this flight, but our plan of landing a Catalina for 8 days in Friggs Fjord and making a concentrated attack on the problems inherent in North Peary Land, came to naught owing to the high cost involved.

When I left for Greenland in July 1953, it was understood that my working base would be on the Centre Lake (80° N); my colleague was again to be Fritz Müller, *cand. phil.*, who had been engaged in the study of the configuration of Arctic territory.

Although there did not appear to be much hope, Müller and I clung obstinately to the North plan. The crew of the Norseman "Liten", pilot Hans Lunding, engineer Poul Nielsen and radio operator Egon Nielsen, after consultation with the leader of the expedition, Dr. Lauge Koch, were prepared to assist me in my scheme. It was essential to establish a fuel dump somewhere north of 80° N, so that we could fly with a payload of at least 220 kg. (484 lb.).

We experienced another disappointment when we realised that a dump of 200 kg. (440 lb.) of petrol at 81° N was insufficient for our needs. There was only one other alternative—Station Nord. This Danish-American base in North Greenland was very favourably situated for our requirements as we would only have to start out from there with a minimum payload, consisting of Müller and I plus 70–80 kg. (150–170 lb.) of equipment. First of all we had to have permission to land and also to be quite certain that there was open water and petrol available before we could start our flight. We succeeded in getting into radio communication with Station Nord on August 1st 1953 and got the following reply: "You are welcome, seaplane can land, petrol available." We replied: "Leaving Centre Lake 21.00 hrs."

Little time was wasted in assembling and packing our equipment. Fritz Müller and I were now very glad that in an optimistic mood we had already got together a small supply of provisions. We reckoned on eight or nine days march and took with us a total of 15.07 kg. (33 lb.), built up on a basis of rice and eggs. We also took mountain equipment of a sort with us, the extent of which I will not divulge, but I can assure our climbing readers that it was of a very light nature! Our total weight was limited to 75 kg. (165 lb.) and as we had to take along working material, fuel, a gun, sleeping bags, air matresses and a tent, we had to cut down our reserves, especially food, to a minimum.

The crew made a critical inspection of our pile of baggage; nevertheless I succeeded in smuggling aboard a tin of peach compote. We took this in case we had cause for a celebration of any sort, and there is always some reason or other, especially in the Arctic. The Norseman was fully tanked-up and ready and we took off at the hour arranged. After circling the Centre Lake twice, we followed the wide Vandredalen to the North. Slowly we gained height; Fritz and I exchanged glances and winked at each other. Everything was going to be fine.

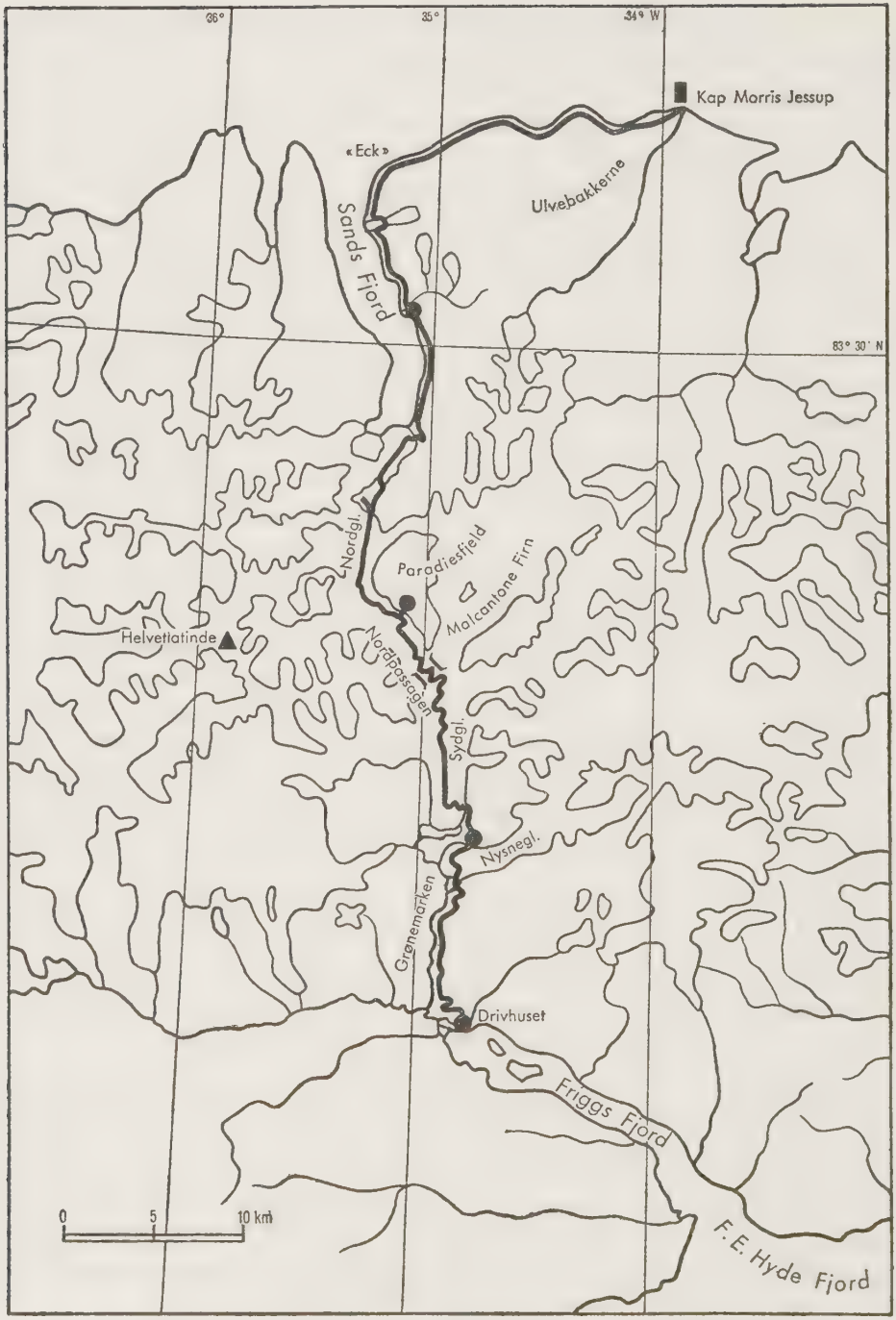
We passed over beautiful scenery, the low sun emphasised the light and shade in the rock walls and the little ice domes on the plateau looked for all the world like sugar icing. We left the Vandredalen at about 81° N and flew into the trough of Independence Fjord over a low saddle. Our job now was to find Station Nord, as Lunding and I did not agree as to its position and the radio direction we had received from the Station itself did not tie up in any way with our map. It was not until later on that we found that the map was 40 km. out as compared with the grid. We need not have worried however, for it was not long before we saw the magnificent site of this latest weather station in North Polar territory.

Suddenly a column of red smoke rose up from the shore; it was the occupants of the station signalling the best landing place for seaplanes. This was very necessary as we had already observed several large icebergs and floes floating in the waters of the fjord.

We received a great welcome on shore and Kurd Nielsen, head of the station, fully maintained the Danish reputation for hospitality. They showed us over this well-equipped base and we were glad to see that, besides the latest refinements of modern technical equipment, they still kept sledge dogs, those true friends, who, when all is said and done, still remain the most reliable means of transport in the Arctic.

While we partook of a splendid repast, the weather men were doing their stuff. They cooked up for us a meteorological report for North Peary Land, composed of various reports and the inevitable intuition of the true weather-forecaster. This report was so favourable that we took leave of our new-found friends and took off once more for the North, after making in duty bound the usual nose-dive salute on to the crowd of well-wishers on the shore.

The huge Independance Fjord was showing large stretches of open water, which we took for a good omen. After wisps of cloud began to make orientation more difficult, we followed a ridge of mountains on our left for over 100 km. We tried to discover our position by means of the map, but it was not until we reached the mouth of the F. E. Hyde Fjord that the weather cleared up but became somewhat gusty. We turned off to the west, and I began to be convinced that the fate of my plan would be decided at Friggs Fjord.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35°
34° W
Kap Morris Jessup
«Eck»
Ulvebakkerne
Sands Fjord
83° 30' N
Nordgl.
Paradiesfjeld
Malcantone Firn
Helvetiatinde
Nordpassagen
Sydgl.
Nysnegl.
Grønemarken
Drivhuset
Friggs Fjord
F. E. Hyde Fjord
0
5
10 km

The following description of the wonderful mountain world surrounding us comes from the pen of Lauge Koch *(Survey of North Greenland)*, who in 1938 was the first to fly over Peary Land and solved the geographical problem of the unknown connection between the mouths of the fjords.

"Some distance further on, the fjord issued a branch towards the North. Two islands were situated in this fjord branch, which continued in a broad flat valley, at first in a northerly and subsequently in a westerly direction. The valley was bounded on the north by a mountain range, whose highest peaks were mapped by me in 1921 from the sea ice north of Greenland. Four large glaciers descended the south slope of the range. The valley into which the glaciers descended was protected towards the east, north and west by the mountains, which formed something like a circular hot-house. I therefore called it Drivhuset —the hot-house. Here, just south of the northernmost point of Greenland, it must be wonderful in the summer. This place must afford an excellent working field to zoologists and botanists. Perhaps they will one day arrive by airplane and remain during the summer to study the plant and animal life here at the end of the world."

What had been a dream in 1938 was now a reality. It is true that the ice-blocked mouth of Friggs Fjord had alarmed us a little, but right inside, behind the two small islands, lay a wide ice-free stretch of water on which we landed at 03.15 hrs. on August 2nd. We took off all our baggage, shook hands, confirmed our rendezvous (18.00 hrs. on August 10th), and the Norseman took off, disappearing to the south-east in a wide curve.

Although we were very tired, we made a reconnaissance of our immediate surroundings. We were on a desolate sandy shore which towards the interior turned into pebbly terraces. A surprising quantity of vegetation was present in damp gullys, such as willow herb, dandelion, a species of marguerite and various grasses. On the shore grew the star-shaped Kochlearia and we also saw tracks of foxes and hares in the sand, as well as that of a musk ox. We disturbed two auks which flew up with a loud trumpeting noise. To the north of the pebbly terraces, partly obscured by cloud, we saw a mountain chain, in which was a deep notch on the sky line. This was our objective, a large valley running to the north. First of all, however, we pitched our tent and had a good sleep.

We did not wake up until 11.00 hrs., whereupon we packed our loads, which we were to carry for nine days. Our years of experience of pack-carrying stood us in good stead, each of us said his was the best packed load and we both grumbled about the articles which had to be strapped on outside, such as sleeping bags, tent, gun and bottles of petrol. At last we were ready and set off bestowing a half-amused, half-anxious look on the pile of reserve food which we had to leave behind under a cardboard box secured with stones.

Spurred on by excitement and curiosity we set off at a spanking pace. We climbed over a rock ridge down into the valley we had previously sighted and here we had a great surprise: the floor was thickly covered with vegetation. Cotton grass and horsetail grew in dark green swamps, and ranunculus appeared among the mosses. In dry ground, heath plants such as *Cassiope tetragona* and *Dryas integrifolia* were prevalent. Dried up earth slopes were overgrown with creeping Polar willows, having stems 2 in. thick.

The floor of the valley was wide and slightly undulating, with pinnacled rocky ridges rising up to 4700 ft. on either side. Although the sight of the heath, with its little white bells, was very lovely, it was very difficult to walk on the heather ridges. It was rather like trying to walk on railway sleepers at home, one step was too short and two too many! We were glad of the slight rest obtained by watching the antics of two Arctic gulls as they attacked a Polar fox. He fled, his jaws snapping in the air as he went.

At this point the Nysne Glacier (New Snow Glacier) pushes right across the valley from the east. Once we had climbed up the side we made good progress on the tongue, which was free of crevasses. For a long time this glacier had blocked the view to the north; however, when we reached the middle of the tongue we could see a good part of our way ahead. A large glacier flowed down the valley itself, gradually rising towards the north; its tongue, however, did not reach the Nysne Glacier. Far to the north a pass was to be seen which agreed with our map and we christened it "Syd Glacier" (South Glacier).

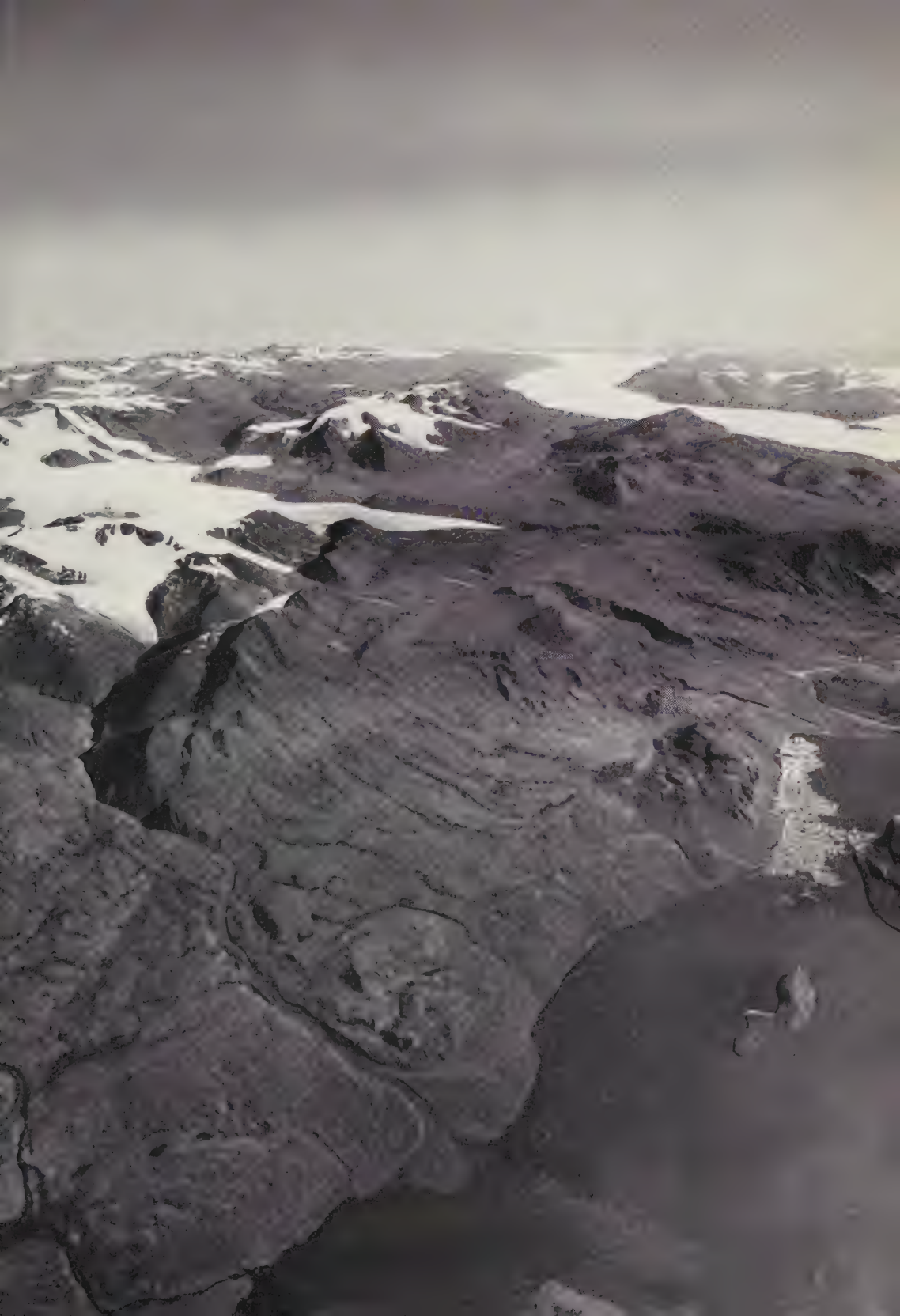
We camped by the tongue of this Syd Glacier and felt strengthened after pemmican soup (occasionally compared to sawdust!). We then crawled into our sleeping bags after having had a look at the weather; the sky was overcast, which made it ideally cool for marching with heavy packs.

On August 3rd we started off up the Syd Glacier in a blizzard. It was only possible to make any progress at all up this glacier, which is traversed throughout

Plate 45: View from the west of the ice-free Friggs Fjord. Distance between the islands about 1.5 km. (1 mile approx.) The delta of the large river is visible in the foreground; in the background can be seen the ice-covered F. E. Hyde Fjord. (Geodetic Institute, Copenhagen: Copyright.)

Plate 46: View from the west of the Grönemarken Valley gently rising from right to left. In the centre is the Nysne Glacier; to the left, the snout of the Syd Glacier, and in the background the F. E. Hyde Fjord. Distance between the edges of the picture at valley level 6 to 7 km. (3¾ to 4¼ miles). (Geodetic Institute, Copenhagen: Copyright.)

Double-plate 47/48: View from the west of the Nord Glacier with its large surface streams. Bottom right is a lower summit of the Helvetia Tinde (2000 m., 6550 ft.). Centre of right-hand edge of picture (survey mark 4 0), the Col "Nordpassagen" the outlet for "Paradiesfjeld" at the top centre of the picture. Centre of left edge of picture: upper end of Sands Fjord. Top background: Polar Sea to the left, F. E. Hyde Fjord to the right. At the bend of the Nord Glacier can be seen the gorge by means of which the crevassed zone (clearly visible) was outflanked. Distance between Nordpassagen and Sands Fjord 14 km. (8¾ miles) as the crow flies. (Geodetic Institute, Copenhagen: Copyright.)



its length by ribs of ice, by proceeding up the middle along the beds of streams. The discovery of a musk ox skull, however, indicated that we were on a regular "track". The blizzard and mist got thicker but despite this our Airex clothing proved its value. We steered for a mountain which appeared from time to time out of the mist towards the north and eventually reached the "Plaine Morte" at about 1850 ft. This was a sort of swamp-like névé which frequently broke under us, eventually giving us very wet feet. A strong west wind was blowing at the top of the pass (2240 ft.), which we named North Passage, so that we did not stop long on this flat and windy watershed.

The wind dispersed the clouds and before us to the left we could see the North Glacier making its way northwards, while to the right another glacier, the Malcantone Glacier, ascended slightly to the north-east. Between these two glaciers lay the gentle west face of the mountain we had steered for earlier on. All the other summits round about were fairly steep rock peaks. After a short discussion we decided to follow the left-hand glacier down the valley, principally because the steep rock flanks bordering the ice stream on either side seemed to promise good geological opportunities.

We now came to an area of large surface streams. Having already jumped across some of them and evaded others by crossing the ice bridges, we now encountered the main stream, which was leaping with remarkable speed through a channel in the ice up to 9 ft. deep and between 2 and 5 yards wide. Fritz Müller jumped, landing on a ledge of ice close to the water's edge, but the heavy load he was carrying thrust him against the ice wall, bruising him severely, and it was only by vigourous use of his ice axe that he stopped himself falling back into the stream. Seeing this, I decided to throw over my load piecemeal. This turned out not to be such a good idea after all, for the gun suffered considerably, the butt being split and the barrel bent. I also lost my note-book, which slipped out of my sack and was swept away by the raging torrent. We soon recovered our tempers, however, and tramped away over the ice ridges towards "our" mountain.

After a search we found a way off the glacier on to a terrace covered with moss and flowers and we pitched our first tent north of the mountain, close to a glacier lake. This place was so beautiful that we were prompted to christen the mountain "Paradise Mountain".

Double-plate 49/50: View from the west of the Sands Fjord, the Polar Sea and Cape Morris Jessup. Centre of right-hand edge of picture, the tongue of the Nord Glacier. All along the east bank of the fjord (upper part of the centre of the picture) can be seen the steep cliffs and the hanging glacier just before the mouth of the fjord. Cape Morris Jessup is the second small point to the east of the entrance to Sands Fjord. Length of fjord 15–16 km. (9½ to 10 miles) as the crow flies. (Geodetic Institute, Copenhagen: Copyright.)

On August 4th we awoke to beautiful weather and the surrounding peaks were seen in their full glory for the first time. To the west rose an ice pyramid looking like Lucendro and we named it Helvetia Tinde (Swiss Peak). It was about 6500 ft. high and the highest mountain in North Greenland. As we ascended from our tent we could see more and more peaks that were totally unknown. Our enjoyment of the scenery was momentarily distracted by the sight of an ermine which ran round us trustingly and full of curiosity, finally playing about between Fritz's boots.

Although we would gladly have remained longer, we had to go on, for we had set as our day's objective a delta on Sands Fjord. Once again we were lucky enough to find an easy route along the much weathered glacier, alongside a stream leading straight to a huge moraine wall thrown up by a great bend in the glacier. It turned to the west at this point, which did not exactly suit our purpose, so we climbed a nearby rock point to get a view over the way ahead.

From the top of this pinnacle, about 1800 ft. high, we saw that the glacier made a wide swing of several kilometers to the west, then turned back on its tracks and followed its previous course to the north. We saw in the distance that the ice of the glacier was succeeded by that of a different type; it was in fact the ice of Sands Fjord. The North Glacier descended 1300 ft. in its great bend and this, together with the pressure exerted, produced a crevassed zone which proved a great hindrance to us with our heavy loads.

However, we had noticed a sort of gully which broke through the wall at the bend and this seemed as though specially made for us. In this way we managed to circumvent the crevassed zone and soon dropped 1300 ft. almost to sea level. On the other hand we had a rather cool reception down below, as a wide glacier stream forced us to take a cold bath. Our legs became a little numb, but we kept our spirits up with encouraging cries to each other.

Once more on the glacier, we followed a route which we had noted from our rock pinnacle and soon arrived at the tongue of the glacier, which was calving from time to time. Small ledges in the almost vertical 100-ft. high moraine wall enabled us to get down with safety and, after wading through another stream, we finally reached a green marshy meadow, nine hours after breaking camp. A further short march brought us without further trouble to the edge of Sands Fjord.

Here we encountered science in all its manifold forms: weather, flora, fauna, geology and morphology. But the main problem was: where do we go from here.

Up to the present, apart from the ubiquitous mountain streams, we had followed a good route. Now came the Sands Fjord, full of small bays and indentations, leading northwards to the Polar Sea. We had to follow its east bank and as far as we could see the cliffs rose straight out of the water with only a

small strip of boulder and scree at the foot. We began five hours of purgatory, "balancing" from one boulder to another, never knowing for certain what lay beyond the next one. The worst section was about 700 ft. long, where the cliff descended in great slabs right down to the water's edge. Everything was loose and it did not take much to set the whole pernicious slope in motion. We were very glad when we got to the end of it. About 1 km. away from the delta for which we were aiming, Fritz started up a flock of white grouse and eventually managed to bring down four with our now not very accurate gun. In about five hours we reached our delta, exhausted and cold but in good spirits, and we soon recovered after a good meal.

A walk round our camp showed that from the delta broad terraces followed the edge of the fjord towards the north. We therefore abandoned our plan of trying to get to Cape Morris Jessup via the valley leading to the east.

Our march rhythm was gradually undermined by the eternal daylight of the Arctic summer. We left on August 5th at 19.00 hrs. for our trek to the North Cape. We wanted to travel light and did not strike the camp, intending to make the trip of about 60 km. (38 miles) to the Cape and back in about sixteen to twenty hours.

We started off in good form and before long found a reindeer's antlers and an old Eskimo meat dump, a ring-shaped heap of stones, all of which indicated that we were not far from the shores of the Polar Sea, the old way of entry into East Greenland for Canadian flora, fauna and humans.

We were able to maintain a uniform rate of march for the first few kilometres, after which the terrace ceased and the boulders began again. Nevertheless, as a result of our lightened loads, much practice and the will to advance at all costs, we were able to make steady progress. We were just getting used to the eternal balancing and hopping from one boulder to another and thought we had left the fjord estuary behind us, when we suddenly came up against a practically vertical hanging glacier. As it did not figure on the map, we had left our crampons behind. Later on, at home, I read the following extract from MacMillans diary (Koch, *Survey of North Greenland*, page 134), which I ought to have seen before:

"On the eastern side of Sands Fjord—another fine panorama—a glacier, starting at the very summit of the range, comes down into the sea ice, at times dropping almost vertically with some wicked looking cracks along the edges."

There was nothing we could do except climb along the south side of the glacier until we came upon a level place at about 800 ft., where we were able to cross it in ten minutes and climb down on the north side. Before we tackled the final boulders, we brewed our favourite concoction of Nescafé and Ovosport with a little Nestlé powdered milk and lashings of sugar, all dissolved in the slightly saline fjord water!

At about 04.00 hrs. on August 6th we reached the end of the cliff face on the right and were able to look round the corner. And what a view! Before us lay the pack ice of the Polar Sea, the floes of which were more than often tilted up into walls and towers, between which could be seen small open leads of water. The ice reflected back the sun's rays which were breaking through the clouds to the north. We said not a word, but a spirit of mutual understanding possessed us. We then clambered down to the sea from among the last boulders, where we were duly received by a curious seal sitting by the edge of the ice. At last we were rewarded for our hours of labour in the labyrinth of boulders. The ice thrown up by the current on to the flat shore formed an ideally wide road which we followed to the east, taking care not to deviate too much to the left where pools of blue water lay treacherously concealed below a thin covering of ice and snow.

We were now only 17 km. (11 miles) from Cape Morris Jessup, so we started off again at once. It had been snowing lightly all "morning", but now it stopped and a strong following wind helped us on our way. We encountered traces of our three predecessors, such as pieces of sledging equipment, a rusty tin and also a small cairn on the sand banks and shore terraces. On leaving the ice we entered a region of mossy vegetation, where the *Saxifraga flagellaris* was in flower; it puts forth a bright yellow bloom out of a clump of green leaves with reddish tips.

The flat shore which we were following was bounded on the landward side by a rocky ridge of 150 to 300 ft. high. Now and again, through small gullies, it was possible to get a glimpse of the hills south of the ridge. We were about an hour and a half distant from the Cape when Fritz suddenly drew my attention to a peculiar animal which was keeping pace with us along the top of the ridge, always taking good care to be down wind. It was a Polar wolf, now very rare in Greenland, indeed almost extinct. Our "colleague", as we called him, trotted along with us almost to the Cape itself, sitting down from time to time and once howling to us. Eventually he disappeared up one of the gullies cutting through the ridge.

We were now approaching a large delta. The ridge dropped away and changed into lightly undulating country. Our excitement increased, for we knew that our objective was a flat delta. Fritz sighted a heap of stones which on closer inspection turned out to be the cairn at Cape Morris Jessup. We had done it; and at 08.47 hrs. on August 6th we shook hands and mutually congratulated one another. Good team-work was the keynote of our success.

After having put on all our spare clothing to keep out the cold west wind, we examined the interior of the cairn and found a rusty tin and a brass case. The

Plate 51: Werner Mountains: In the foreground the well crevassed Ostre Glacier, with many surface pools. Upper left, the Eulenspitze (about 2000 m., 6500 ft.). The line of ascent was up the ridge dropping down to the centre of the picture.

tin contained the "Danebrog", the Danish flag, and the case a full report from Lauge Koch, dated 1921. Custom demands that on such occasions the original document is taken away and a copy left in its place together with one's own report. It was no joke trying to copy out a long report in a storm at –2° C., the original having been made in the comparative comfort of a tent, so I contented myself with limiting our notes to a few words, name, date, route taken, projected return route and weather conditions.

We now had time to assemble some geological and botanical data. The Cape consists of granitic mica schist, much broken up by movement. The flora was profuse, such as yellow Polar poppies, both kinds of cerastium and some grasses. We were especially interested in the most northerly of all the plants, pride of place being almost equally claimed by the star-shaped kochlearia and the red *Saxifraga oppositifolia*. On balance the latter wins.

We started back at 12 noon. Turning back in unknown territory is usually a hard thing to have to do, but in this case it presented no difficulty as the limit of possible advance had been reached. We set off at a fast pace in order to have time in hand to deal with the boulders in an efficient manner and not to get behind on our time schedule.

A sudden rise in temperature of + 6° C. had softened the surface so that our progress was not as rapid as we had expected. However we made short work of the boulders as far as the hanging glacier but the past twenty hours of marching told upon us as we climbed up the side of the glacier to the level crossing place. Once across, things went better and we leaped singing from boulder to boulder. Just short of the tent we put up a family of white grouse, of which Fritz shot three. The slight pause involved in this incident made itself felt and it was two very tired men who staggered on for the last 500 yards before crawling into the tent, twenty-six hours after setting out. We had a good drink of salt water and some food, for our provisions had been based on twenty hours at the most.

Next day we were obliged radically to revise our time schedule, for we had slept for thirteen hours in addition to our twenty-six hours on the road. At 23.00 hrs. on August 7th we left the camp at Sands Fjord and turned south, leaving behind the gun and ten cartridges, a box of pemmican, four ice and rock pitons, an ice axe, indiarubber and a bottle of anti-gnat fluid. Although I had made a brief geological reconnaissance on the way out, now I had to fill in the gaps on the return journey.

Somewhat to our surprise we found ourselves in excellent condition and, despite our halts for geological investigations, we arrived at the camp by Paradise

Plate 52: Top: Mount Shackleton from the west, aerial photo from 3000 m. (10,000 ft.). Bottom: View westward from Mount Shackleton of the most southerly nunataks. In the background the ice ridge of Central Greenland.

Mountain within eleven hours, which was a gain of three hours on the time taken for the outward journey. We had primus trouble and tried to start it up with Meta fuel, with disastrous results to my forelock!

Next day, August 9th, at 02.00 hrs. we were faced with a difficult decision. The Helvetia Tinde lured us to the west, but clouds were massing to the south on the North Passage, and as we had only sixty-four hours left before arriving at our rendezvous at 18.00 hrs. on August 10th, we hardened our hearts and went on our way.

We were now carrying about 12 kg. (26 lb.) less food than previously and there was also the weight of the dump left behind at Sands Fjord, but we had our geological specimens which, though reduced to the smallest proportions, made up a considerable load.

This time we circumvented the North Passage streams by making a detour to the east close to the Malcantone Glacier. On the col we were greeted by the usual North Passage weather—mist and driving snow. On the descent we got into a regular maze of streams, which we only avoided with much trouble and a good deal of luck. Progress was greatly impeded by the thick mist and we were not able to rest, so we took nourishment en route, consisting of a tin of sardines per man and every hour one prune and ten grapes. As a result of these rush tactics we arrived at our tent on the Nysne Glacier at 10.00 hrs. on August 8th, in record time.

Wet snow, sometimes turning to rain, fell thicker and thicker and we lay very quietly in our tent, taking care not to touch the roof so as to avoid drips. The weather stayed like this for twenty-four very cold and damp hours, during which time we whiled away the hours in inventing new recipes for soup from any remaining scraps of food.

The weather cleared at 10.00 hrs. on August 10th and the last lap lay before us; we had to be at our rendezvous at Friggs Fjord by 18.00 hrs. This time the Nysne Glacier proved difficult. A thin layer of snow overlay lightly frozen water holes into which we fell, getting very wet and icy feet. However we were already so damp that this hardly made any noticeable difference.

We followed the same route, left the glacier and went down the valley over the bumpy heathland. The wind was coming from the south-east, which was the direction most likely to cause floes to congregate in the innermost recesses of Friggs Fjord. This thought made us increase our pace. From the top of the rock ridge above the delta we were able to see the fjord and there was no sign of ice after all. Spured on by the thought of the tin of peaches at the depot, we rushed on and arrived at the fjord at 15.00 hrs.

We had done all that was possible; in nine days we had twice crossed an unknown mountain chain 60–70 km. wide. We had brought back Lauge Koch's

report from Cape Morris Jessup, studied the flora and fauna and, above all, we had produced the first geological cross section of North Peary Land. This called for a celebration! The three hours from 15.00 to 18.00 hrs. on August 10th will always remain fixed in our memories. We positively revelled in emergency rations, for we had reached the depot with only about 10 g. (⅓ oz.) of sugar and half that quantity of powdered milk in hand. We gobbled up all the tins of pears, bars of chocolate, ham and Nescafé and the only thing which troubled us at all was the continuing fresh wind from the south-east, which was beginning to pile up the ice floes.

However, it was soon 18.00 hrs., the weather was misty and overcast to the north and west but F. E. Hyde and Friggs Fjords remained clear and we were already dreaming of Lucullan repasts at Station Nord.

The floes continued to thicken up in the delta. 18, 19, 20.00 hrs. passed and still we heard no sound of aircraft. Now we could get down to copying out our rough notes and also make considerable leeway in sleep.

August 11th went by and we did not dare to go far from camp. However, we did climb up a small hill on the most northerly point of which was a cairn erected by Eigil Knuth a few years ago. The two things that troubled us were the state of our food supplies and the uncertainty caused by the non-arrival of the plane.

We had enough pemmican, rolled oats, butter, sugar, Nescafé and rice for three days, which, at a pinch, could be made to last for six if we limited ourselves to one meal a day. The non-arrival of the aircraft might be due to a variety of causes. In the first place, bad weather at Station Nord might have prevented Lunding from being able to land there, or Station Nord might think that we had bad weather ourselves, or, most disturbing thought of all, Lunding might have had an accident.

As August 12th also went by without the longed-for aircraft, we celebrated the beginning of "austerity" with a very carefully prepared minestra. Our conversation revolved round the weather conditions of North Peary Land; at the moment snow was falling in some of the valleys to the south-west and two thick cloudbanks massed in the north, one at 1000 ft. and the other at 5000 ft. This latter extended far to the south and south-east, but our tent was in brilliant sunshine. We had had to put up with the vagaries of the weather during the whole of our trip and here, situated between the Polar Sea and the Ice Cap—both of them first class factors in forecasting meteorological conditions in the northern hemisphere—it was useless to predict; only luck helped. And this is exactly what we had, when at about midnight on August 12th we heard the sound of an approaching aircraft. The noise did not seem quite right so we scrambled out of the tent and to our surprise saw the Danish Catalina « Pluto » just swinging in to land.

On board was Dr. Koch. I hope that the receipt of the report from Cape Morris Jessup was as pleasing to him—my instructor in all things appertaining to the Arctic—as it was to me, his pupil.

Once more we flew along the F. E. Hyde Fjord and as we did so the clouds closed in over Friggs Fjord. We headed for Station Nord over a sea of clouds.

I was now able to give Dr. Koch the following geological report of the expedition:

The mountain chain is divided into two separate geological units along the axis Friggs Fjord–Sands Fjord, the west to east boundary of which runs over the North Passage. The southern half is characterised by an unusual type of folding. The bedding planes are wrinkled like a concertina and the edges of the folds pitch northwards, which would seem to point to thrusting from the south.

In the northern half, the thrusting is even more intense and isoclinal folding occurs, i. e. the two sides of the fold lie almost parallel to one another. The strata folded in this manner are split up into several small sections by thrust planes and some of the overfolds, or nappes, are reminiscent of Alpine conditions. The rocks of which the mountains are composed exhibit a certain metamorphosis on a south to north axis, in that the further northwards one goes, the greater is the change induced by exposure of the rock to temperature and pressure. Thus, limestone is changed into marble, clay into mica schist and sandstone into quartzite and in the north even into gneiss. The noticeable increase in metamorphosis to the north suggests that the actual centre of the North Greenland folding zone today lies under the surface of the Polar Sea.

The age of the rocks is a little difficult to estimate. As no fossils were found we were obliged to make comparisons with rocks found in situ. In this way we were able to compare the limestones and graphite schists of the southern half with similar rocks in North-West Greenland and place them in the Upper Silurian.

The folding of the series, therefore, must have taken place later than the Upper Silurian, but before the Lower Carboniferous, as the latter overlay the folded rocks in the south (South Peary Land) and in the west (Ellesmere Island).

Dr. Koch was able to supplement my data from his own knowledge of the subject. We now had to discontinue our conversation as we were coming in to land at Station Nord.

Thus our exploration came to an end, which was more comparable to a *coup de main* than to a well organised expedition. My thanks are due to Dr. Lauge Koch, the leader of the expedition, the crew of the Norseman "Liten", H. Lunding, P. Nielsen and E. Nielsen, the crew of the Catalina "Pluto", and above all to Fritz Müller. As good companions we experienced happy hours and hard work in beautiful Greenland, the last free land in the world.

THE ASCENT OF MOUNT SHACKLETON (CENTRAL EAST GREENLAND)

By John Haller (Basel)

"Petermann Peak moreover is not the only outstanding peak, and has its rivals, notably Gog and Magog to the north-north-west and Mount Shackleton to the west-south-west. Perhaps some day these will all attract the mountainer, and if they do he will be well repaid for the difficulties and dangers of reaching the playground."

J. M. Wordie, *Geographical Journal*, 1927

Cold Polar air surrounded us, below us stretched the Greenland ice cap in all its eternal whiteness. May we be forgiven by the wonderful virgin landscape that, instead of making our approach as pilgrims in a suitably humble frame of mind, we sat behind the droning three-bladed airscrew of a Catalina flying boat. The altimeter was steady on the 12,000-ft. line; after a flight of five hours or so over the nunatak zone between 74° and 72° N, we circled the southern spurs of the Petermann chain. This was to be our sphere of activity, in the neighbourhood of the 9600-ft. Mount Shackleton. Thus we not only took note of the geological formation but also of the crevasse system of the extensive glacier plateau. We were directly above the Agassiz Dal and anxiously looked out for Wolfgang Diehl and his three companions, Biner, Graven and Perren the Zermatt porters who were setting up our Base Camp at the edge of the ice cap. What was that white dot on the moraine—a tent or a large rock? The pilot went lower down, then throttled back his engines and we slowly sank down between the abrupt cliffs of the fjord mountains, to glide back just above the blue waters to our starting point at Ella ø.

Three days later, on July 26th, 1953, von Gunten and I landed with a small Norseman aircraft on the waters of Kjerulfs Fjord. Diehl now joined us, having left the Valais porters in the Werner Mountains. Heavily laden with food and fuel, we started up the lower Agassiz Dal through thick grass and dwarf bushes. The Polar sun was hot, our sacks heavy and we were plagued with very aggressive gnats; however, after two intermediate bivouacs, we reached the Agassiz Glacier on the third day. Here was our depot, at about 4000 ft.

In four days we carried tent, food and fuel from our Base Camp to the 6500-ft. glacier plateau of South Goodenough Land. At about 5000 ft. we were able to put on our summer ski and a layer of powder snow made easy work for us. Far away to the west could be seen the summit block of Mount Shackleton. Although the midnight sun was hot, it was noticeably colder than down below. On August 1st we reached the east spur of Mount Hamlet and camped on a narrow ridge of porphyry granite. The wind was unmercifully cold and penetrated tent, ground sheet and sleeping bags.

On the morning of August 2nd we began the assault on Mount Shackleton in earnest. A short ascent took us to the Gultinderne (Gold Teeth), strange elegant granite needles, piercing the undulating névé plateau. Now came a short descent; our steel edges scraped noisily along the frozen surface; two more turns and we were down. Then followed a gentle climb of three hours to the east foot of the mountain. We would not have been able to do this without ski, for the snow was not uniformly packed by the wind and was crusty and breakable in consequence. When we got to the foot, we had a long rest and I examined and sketched the variegated strata while Diehl and von Gunten made Nescafé over the primus with which we ate bacon and chocolate.

We now took off our ski and ascended on foot over slabby quartzite to the 8125-ft. south col of the mountain. The sky was clear and we could see over the ice cap and the most southerly of the nunataks, while far away to the west a few wisps of cirrus cloud lay over the top of the ice cap. In about another hour we had reached the foot of the 1000-ft. snow summit of the mountain. The spikes of the crampons bit deeply into the icy surface of the frozen snow and we made good progress. We were very fortunate, for if the weather conditions had been different we might have had to deal with hard ice and all the step cutting which that would entail. The summit was now not far away and we got there at 17.00 hrs., strong gusts of wind sweeping the snow into our faces. The actual top consists of a snow cornice overhanging the steep east face. My altimeter showed 2880 m. (9445 ft.) which is only exceeded in North-East Greenland by Petermann Peak. The strength of the wind, which had almost reached gale force, compelled us to seek shelter in rock crevices on the north face; the temperature was 7° below. The panorama was indescribably grand. To the south and west the ice cap extended as far as the eye could see and over 3000 ft. below lay the wide Nordenskjölds Glacier with its crevassed tributary flowing from the most southerly group of nunataks. In the north Petermann Peak raised its proud pyramid, nearly 10,000 ft. above the ice plateau. To the east we could see the wide névés and ice plateau of the fjord zone, while in the south-east a few cumulus clouds floated over the serrations of the Staunings Alps. Diehl and von Gunten warmed themselves by building a cairn, while I scribbled down the more important geological data with fingers frozen even in my leather gloves. We tried to orientate the map but in the high wind it proved impossible. Even the traditional summit cigarette was extinguished by the wind.

We left our airy post after two and a half hours and soon reached our previous resting place at the foot of the mountain, via a steep snow couloir. The sun was low and deep shadows were falling to the east. The wind was still blowing strongly on the névé as we continued our way on ski. The midnight sun was red and in its fairy-like majesty we followed our wind-blown track back to our camp

on Mount Hamlet. It was quite late when our dish of pemmican was ready to be eaten. Tired but happy we celebrated the first ascent of Mount Shackleton with hot tea, glowing pipes and an extra ration of chocolate.

Many times on the return journey to the shores of Kjerulfs Fjord, where we arrived on August 18th, we looked back from the lonely nunataks to the white peak which had provided us with such an unforgettable adventure.

IMPRESSIONS OF THE WERNER MOUNTAINS

By Peter Bearth (Basel)

(Professor Wenk and Professor Bearth were responsible for the geological examination of the Werner Mountains, and Zermatt porters set up the Base Camp in the interior)

Our group had the task of examining the small but very glaciated massif of the Werner Mountains, south of Kong Oscars Fjord. This chain, circular in shape, with a radius of about 10 km. (6 miles), rises up to 2000 m. (6565 ft.) and is small compared to its neighbour the Staunings Alps.

We landed in the shallow bay of Mestersvig late on the evening of July 23rd, 1953, after a flight down the ice-covered Kong Oscars Fjord. We were not entirely gratified by our reception. The weather was dull and overcast the Werner Mountains were concealed in the clouds and the mirror-like surface of the bay lead-grey and uninviting. Even the icebergs did not awaken warmer feelings in us!

Our two experienced Greenland travellers, Professor Wenk and Dr. Buess, immediately divided up the most necessary equipment into four loads; the melancholy aspect of the barren shores of Mestersvig did not seem to affect them in any way. We two newcomers, however, were soon well versed in the art of carrying heavy loads, tramping over endless moraines, wading through cold glacier streams and finally sleeping on bare stones.

A week later we saw for the first time the upper névé basin of the Ostre Glacier, which was to be my field of activity for several weeks. The Ostre Glacier is a wide ice stream, very reminiscent of the upper part of the Grosser Aletsch Glacier.

Two icy rock towers rose up in the background, the sight of which caused our hearts to miss a beat. It was not, however, until a week later that my nephew Theodor, Biner and I were able to climb the more southerly of the two (christened "Eulenspitze" by us). In the meantime I had pitched my tent on the upper Ostre Glacier, my four porters had reached me after getting lost once or twice, a shuttle service had been established between our Base Camp and the bay of Mestersvig and we had lost a few, but not all, of our illusions.

A fortnight later, Graven, Theodor and I succeeded in traversing the second peak, the Möwenburg, on an unexpectedly fine day. Not only was the weather glorious but the rock was sound and we had a two-hour climb of sheer delight on the south face of the mountain. The descent down the steep north face was also a pleasure owing to the hard condition of the snow. This climb was the highlight of the whole expedition in Greenland, which provided us with a first ascent nearly every day, but we have no time to recount them all here.

We were often reminded of parts of the Valais and Bündner Alps, well known to us all and we felt more than a little homesick when we thought of the firm ridges, spires and faces of the Bregaglia. They seem as if they would last for ever, while the Werner Mountains impressed us with the thought that everything temporal is but transitory. The most crazy towers and savage faces would appear to be waiting for the day when they would disintegrate and fall in ruins. Every hold had to be tested in every direction, not a ledge but had to be swept clear of accumulated debris before a foot could be set upon it. How often had we to save ourselves from being carried down the mountain side in an avalanche of stones let loose by our own feet! The fallen debris and scree filled the surrounding terrain, spreading out fan-wise in the valleys, making it a penance to cross as the rocks were sharp and easily tilted over when stepped on.

However, all this was forgotten when we stepped on to the summit and saw spread out below us beyond the grey foothills, the deep blue band of the fjord with its icebergs, or the sea itself. On fine days the air is crystal clear and free from cloud as it never is at home and how often have we not blessed that most appropriate institution of Greenland, the midnight sun, which absolved us from any consideration of time? Never shall we forget that irridescent light over the fjord, as we sat at midnight on top of the Eulenspitze and looked out over that immeasurable waste of rock, water and ice that we call Greenland.

HIMALAYA 1951–1952

By Marcel Kurz

Sikkim

With the communist occupation of Tibet, Sikkim has deeply felt the effects of the enemy's nearness; not only are its northern and eastern frontiers completely closed to tourists, but so strict have the police become that it is often impossible even to go from Darjeeling to Gangtok, the capital.[1]

Serious explorers to Sikkim are becoming increasingly rare and are quite naturally falling back on Nepal or the Garhwal. This is doubtless why we can record only one exploration during the period 1951–2: that by the Swiss, Georg Frey, in October 1951. Even so, it was carried out to a large extent on Nepalese territory, since it was concerned with exploring the Yalung Glacier, to the south-west of Kangchenjunga, in greater detail.

After following the Singalila and crossing the Semo La, Frey ascended the Yalung Glacier and explored especially its western tributary, the Tso. He then succeeded in making the second crossing of the Ratong La (17,051 ft.), attempted the Kabru and was eventually killed while climbing a small rock summit, P. 19,130, to the south-east of Koktang.

The Zemu basin appears to be one of the last regions still open in Sikkim, so the tourists willingly fall back on this grandiose amphitheatre, though without great hope of climbing its difficult summits. Thus we note that in October 1952 a small Anglo-American expedition failed to reach the Sugarloaf, the foremost outpost of the Kantsch.

The monsoon was ending when this party arrived in the Green Lake plain and took up quarters at the spot previously used by the Bavarians. On the first fine day Mrs. Monica Jackson (née Morris) and R. H. T. Dodson (American), with sirdar Lhakpa Tsering, ascended a snow dome situated on the southern bank of

[1] One can say that the closing of the Sikkimo-Tibetan frontier coincided with the arrival of the Dalai Lama at Yatung (Chumbi) at the end of December 1950.—Regarding this historic flight, see the photographic report by Heinrich Harrer in *Life* (international edition) of May 7th, 1951. See also Harrer's book *Seven Years in Tibet*, Hart Davis, 1953.

Plate 53: South face of Macha Puchar (6997 m., 22,950 ft.) from about 3800 m. (12,465 ft.) on the west arête of Seti Khola.

Plate 54: Porters' strike in the Rishi Gorge on the way to Nanda Devi.

the Hidden Glacier (probably P. 20,000 or a neighbouring dome; these summits, however, had already been visited by the Grob expedition of 1939).

But their principal objective was the Sugarloaf (21,180 ft.), climbed by Allwein and Brenner of Munich in August 1931. Ascending the Zemu Glacier, they camped at the foot of the Ostsporn near the junction of the Twins Glacier. Lhakpa, their sirdar, was suffering from malaria and had to return to base. The Anglo-American pair continued with three Sherpas (Lhakpa Gyelbu, Nyima Tensing and a Gyaldzen) and forced their way, not without difficulty, through the icefall of the Sugarloaf Glacier in order to pitch a last camp in the upper glacier bay at about 19,350 ft.

From there, divided into two ropes, they reached the south-west summit ridge of the Sugarloaf, which they followed to the spot where there is a large gendarme. At 11 a. m. Mrs. Jackson and her two porters turned back while Dodson and Gyaldzen forced the gendarme and pushed on higher along the final ridge. But the deep and avalanchy snow obliged them eventually to beat a retreat. The expedition returned to Gangtok in splendid autumnal weather.[1]

Nepal

The Nepalese government has continued to show itself very accomodating towards the foreigner and has given its approval to the majority of the requests that have been sent it for the exploration of the mountains of Nepal—on condition, of course, that these requests are properly addressed through diplomatic channels and that the same mountain does not become the simultaneous objective of several expeditions.

Thus for certain summits it is now necessary to register one's name years in advance, so numerous have the applicants become! For Nepal possesses treasures of every kind and its ethereal giants are not the least coveted of them. The real race to the eight-thousanders (26,250 ft.) has only begun. A new day is dawning over Nepal. In the years 1951–2, its territory has seen large and small expeditions, the majority of which were aiming at Everest itself.

The first of these, chronologically, passed almost unperceived, for it was more or less clandestine. Klaus Becker-Larsen, a Dane, has published nothing about it, but his odyssey has been told to our correspondent in Darjeeling by his Sherpas. The story will be found in *The Mountain World*, 1953, pp. 33–4.[2]

[1] Cf. *Mountain Craft*, No. 21, 6–9 (Monica Jackson: "Two Climbs in Sikkim"). *American Alpine Journal*, 1953, 573–9 (Dodson).

[2] To understand this story, like all subsequent accounts concerning Everest, the reader should be warned that we have transferred the name *Lho La* to the place where it ought to have been, that is to say, between Lhotse and Everest, and that the former Lho La is now known as the *Khumbu La* (20,013 ft.). This has not been done in any spirit of contrariness, but rather out of respect for symmetry. To the north of Everest we have the Chang La and Changtse (*Chang* = north), thus on the south Lho La and Lhotse (*Lho* = south)

The original Lho La had been thus named by Mallory, coming from Rongbuk, that is to say, ascending from north to south. But for Tibetans all passes opening on their southern border are Lho La. This designation is therefore much too vague. We have called this pass, which opens on the axis of the Khumbu Glacier the Khumbu La. This rectification figures on the map annexed to *The Mountain*

After Houston's and Tilman's reconnaissance of the Khumbu Glacier in November 1950, one might have expected a large American expedition for the spring of 1951. It did not eventuate. On the other hand, the press echoed at this time the story of great Soviet preparations on the Tibetan side. Nevertheless, this tendentious news had the good result of reawakening British ambitions, which had been quiet since 1939.

It was Michael Ward who picked up the threads again in May 1951 and suggested that the Everest Committee (today the Joint Himalayan Committee of the R.G.S. and A.C.) should ask Nepal for its authorisation of a reconnaissance of Everest that same autumn. This suggestion was very energetically supported by his two colleagues in the Alpine Club, Campbell Secord and W. H. Murray. Before even a reply was received, Murray (whom we had followed to Garhwal in 1951 and who seemed animated by a very great faith) began immediate preparations.

Shipton returned from China in mid-June. He was quite naturally offered the leadership of the expedition. At this time the political situation in Nepal was so strained that there was much doubt whether the authorisation would be granted. But it was, against all expectations. Shipton then decided to take advantage of this unique opportunity and he did not have to regret it. He had long dreamed of some time visiting the homeland of the Sherpas, with whom he had had such close ties during his numerous explorations, a homeland of whose many marvels he had heard tell.[3]

For a quasi-professional explorer as experienced as Shipton, this 1951 reconnaissance must have been the realisation of an old dream and the crowning of his career. To resume the attack launched thirty years before by Mallory, and from a new and totally unknown side!

It was no less than a question of proving the possibility of crossing the Khumbu Icefall, of ascending the Western Cwm[4], of climbing to the South Col (our Lho La) and of following the south-east ridge to the summit—all this in autumn, after the monsoon. No one believed in it. Furthermore, Shipton

World, 1953, and we hope that the English will agree to it. It was necessary before it became too late. We do not ask that the expression "Lho La" should be preferred to that of "Col Sud" or "South Col", which is very practical, but rather to forget the former Lho La (20,013 ft.) because it is too vague, and to adopt "Khumbu La" which replaces it to advantage.

Similarly, "Nup La" has neither rhyme nor reason: it is much too distant from Nuptse *(Nup* = west). Something different must be found.

In the same order of ideas, we note that west of Namche, on a front of fifty miles, there are no less than three great rivers bearing the name of "Bhote Kosi" (= Tibetan river). This is quite natural for the Sherpas and Nepalese in general but from a geographical point of view is very far from precise. The Bhote Kosi which joins the Dudh Kosi to the south of Namche has all its sources on Nepalese territory and thus does not merit the name. On the other hand the other two certainly rise in Tibet. The nomenclature is truly elementary throughout this region.

[3] It was Shipton who introduced the name Sola Khombu, but we did not follow him without first obtaining the definite advice of our tibetologues. Solo and Khumbu are two contiguous districts forming an immense territory, an ethnic and religious entity. The frontier between these two districts is near Ghat. The form *Solo Khumbu* has been established by L. Krenek, a teacher at Darjeeling, after questioning about a hundred Sherpas.

[4] It has been suggested that the word "cwm" or "combe" be replaced by "cirque", but "cirque" implies a closed circle, which is unsuitable in this case. Here it is a question naturally of an entirely glacial combe. About the word *Cwm* and its translations, see the amusing study by Felix Germain in *Alpinisme*, 1953, 302 seq.

reckoned to take advantage of the occasion to explore the whole surrounding region and to push further west as far as Gaurisankar.

Only Mallory in 1921 and Shipton in 1935 had caught a glimpse through the clouds of the inviolate sanctuary of the Cwm, but access to the South Col remained an immense and unknown factor. This route seemed so terrible that they retained only a fleeting vision of it rather than a real hope. Meanwhile Shipton had become less sceptical—we might almost say "under compulsion", since the Tibetan route was definitely closed. Doubt slowly transformed itself into a vague hope.

From that moment the preparations were pushed forward feverishly, but the effects of the war were still being felt and many things were complicated thereby. The budget did not permit a party strong enough to attempt the summit itself. This was to be a "reconnaissance" and nothing more, it was thought, with a possibility of starting again the following spring. The greatest contribution came from *The Times*, which secured exclusive rights to the despatches.

Secord, whose home had served as depot, had eventually to abandon the trip, and our compatriot Alfred Tissières too. Murray and Ward, with all the material, embarked on August 2nd and arrived there on the 18th. Shipton and Tom Bourdillon (A.C. 1951) went direct to Delhi by plane, landing there on the 19th.[1]

Quite naturally, Shipton followed in the steps of Houston's expedition of the previous November, but he arrived in the middle of the monsoon and suffered a great deal from it. At Jogbani he found an old companion with whom he had done eight Himalayan expeditions. This was the famous sirdar Ang Tharke, who was to be his right hand. He was accompanied by twelve other Sherpas *en route* for Solo Khumbu, who were all engaged as porters to Namche Bazar. From Jogbani (departing on August 27th) Shipton went by truck to Dharan where, not without difficulty, he engaged twenty-five local coolies whom he changed at Dhankuta and at Dingla, where he halted for four days. It was there that he was joined by the New Zealanders, Hillary and Riddiford, whom we had followed to Mukut. After Dingla the monsoon was particularly bad for ten days. On September 22nd all were together at Namche after four weeks of difficult marching. The monsoon had just come to an end at last. Shipton was royally received by his friends the Sherpas, and his arrival at this celebrated place was a real festival.[2]

[1] Shipton's age was 44 years, Murray's 38, Bourdillon's 27, Ward's 26, Hillary's 32, Riddiford's 32.

[2] Shipton gives the altitude of Namche as 12,200 ft., which is certainly too great. We have adopted 3350 m. (10,990 ft.), the average of a dozen barometric readings taken in 1952. On the other hand Shipton records a fact that has not been revealed by any member of the Swiss expeditions: that the Sherpas are as much nomads as the inhabitants of the Val d'Anniviers, that they have shelter and fields in several places and at different altitudes. According to season, they move from one village to the other with their goats, sheep and yaks to pasture them. Namche Bazar naturally remains their capital and they pass the whole winter there. Their costume and religion are the same as those of Tibet. The Sherpas' language is a simple Tibetan dialect.

Murray claims that, according to the Namche rain-gauge, the annual precipitation attains only 76 mm. (c. 3 inches) and that the climate can be considered dry in comparison with regions further east.

At Namche the expedition was joined by G. N. Dutt, an Indian geologist sent by the Geological Survey of India.

On September 25th the expedition left Namche with ten Sherpas equipped for high altitude, and fifteen others as porters to the base camp. After an ascent of about 2000 ft. through the forest, the expedition reached Thyangboche late in the evening and the ridges were shrowded in mist, but the next day an enchanting dawn rose upon one of the finest sights in the world. Shipton cannot speak too highly of this place and the view it enjoys, in such contrast to the horrible Rongbuk Valley.[1]

The descent to the Imjya Khola was also done through woods (pines and birches). Beyond Pangboche they finally left the forested zone and entered the pasture regions. The expedition spent the night at "Phariche" (this might well be the proper spelling), a "village" which at this time was uninhabited. Shipton claims that it was at this point that he branched off to ascend the Lobujya *(sic!)* Khola, and the map published in *The Times* is likewise incorrect, since it indicates the Chola-Imjya confluence downstream from the Khumbu-Imjya confluence. Shipton must have been misled by the sudden appearance of the peaks that stand on the Tibetan frontier at the far end of the Khumbu: he immediately recognised Pumori, Lingtren, Changtse, etc.—while his sirdar, Ang Tharke, who had spent all his youth in these places and afterwards participated in several Everest expeditions, never recognised them! Which proves the little interest the natives take in their mountains.

Profiting by the experiences of Houston and Tilman, Shipton avoided the Khumbu Glacier and ascended the Lobuje glen in order to pitch his base camp near the little lake on the right (west) bank. Here, too, his altimeter (18,000 ft.) exaggerated.

On September 30th Riddiford, Ward and Bourdillon, with two Sherpas, crossed the glacier to reconnoitre the lower Khumbu séracs. On the same day Shipton and Hillary climbed to 20,000 ft. on the southern ridge of Pumori, as far as the spot whence the view stretches a long way towards the South Col, Lhotse, Everest and even beyond. For the first time, it seemed, man was looking upon the riddle of the South Col, but all the flat part of the Cwm remained hidden despite the deep channel formed by the ridges falling from Everest and Nuptse.

This is what Shipton himself writes in his book (p. 40): "We estimated that the floor of the Cwm at its head was nearly 23,000 ft., about 2000 ft. higher than we expected. From there we could see that there was a perfectly straightforward route up the face of Lhotse to about 25,000 ft. whence, it seemed, a traverse could

[1] At Thyangboche Murray reckons there are 40 monks and a dozen houses around the monastery. The gong which serves each day to give the women the signal to retire at about 5 p. m. is none other, apparently, than an old oxygen cylinder brought by the Sherpas across the Nangpa La.

Murray records the death (in 1950, at 85 years) of the famous Rongbuk Lama, who had given his blessing to British expeditions since 1922. For half a century he had remained at the head of this monastery (see his obituary in the *Himalayan Journal*, 1952, 159–60).

be made to the South Col. This long traverse would only be possible in good snow conditions—at present conditions were obviously anything but good."

Thanks to his excellent glasses, he recognised Riddiford and his Sherpas in the Khumbu séracs and saw them ascend four-fifths of the lower fall. The others had climbed too far to the right and had had to descend again. What also interested him very much was after many years to examine from an entirely new angle all the details of the north face of Everest where he had struggled so hard on other expeditions: the "Yellow Band", the "Black Band", the "Second Step" and the great couloir, all deeply covered with snow.

The next day Shipton made another reconnaissance which gave him the chance to examine the icefall from top to bottom. This view was a little more encouraging than the first.

As he and the two New Zealanders were standing the altitude better than the rest, they left on October 2nd with Bourdillon and three Sherpas to try and force the icefall in one day. They set up their advanced base at the foot of the séracs, near the wide bend of the Khumbu Glacier. On the 3rd it snowed almost throughout the day but the 4th was fine and very cold. At this period of the year the sun is very late in appearing and, in the shadow and the fresh snow, one's feet are put to a harsh test. Three and a half hours sufficed them to ascend to the point previously reached by Riddiford (Bourdillon had to halt there). The air was still and the burning sun, the almost unbearable reflection from the snow and its great depth, all considerably slowed their pace.

Towards the middle of the afternoon Shipton thought he had reached the top of the séracs. Nothing more remained than to cross or to circumvent a few large crevasses in order to break out into the Cwm. A small avalanche made them turn back and they got back to their camp as night fell, all very tired, but satisfied with their reconnaissance. It was then decided to wait for a fortnight in order to leave the snow time to settle and the sahibs to become acclimatised. Meanwhile they explored other regions of which we will speak later.

Since their arrival the wind had been blowing consistently from the south-west and the fine weather continued, very clear in the morning and cloudy in the afternoon, while the night occasionally brought a slight snowfall.

On October 20th some of the more comfortable tents were pitched at the advanced base and the attack was resumed on the 22nd. The snow was certainly better this time, but on the other hand the glacier was more complicated and still more crevassed, doubtless as a result of the fine weather. Certain parts were unrecognisable, as if they had suffered an earthquake.

On October 28th, all together, they arrived beyond the last séracs at the edge of the great glacier Cwm and at last discovered the highroad which rises at a gentle slope to the foot of Lhotse, like a sanctuary of stretched white cloth.

There nevertheless remained a few formidable crevasses which appeared to split the glacier from one bank to the other. One might perhaps avoid them on the left, at the foot of the shoulder of Everest, but these slopes were swept by avalanches. Moreover the actual state of the icefall seemed too dangerous to hazard a continuous shuttle-service of Sherpas. Ang Tharke, the sirdar, was very pessimistic and absolutely opposed to it. It was then decided to postpone the attack itself till the spring, in the hope that the conditions would then be more favourable.[1]

In *The Times*, Shipton summed up the results of the expedition in a few paragraphs. This reconnaissance had proved the existence of a possible route via the Cwm, the South Col and the south-east ridge, provided that the snow conditions are favourable. For him and his companions this was a pleasant surprise, for nobody really believed in it. This new route presented several advantages over the old one: it was better sheltered from the north-west winds—at least, as far as the South Col—and the south-east ridge seemed easier than the north face (as was known already, the strata are favourably imbricated). A disadvantage was the long oblique traverse on the west face of Lhotse: after a snowfall this traverse would be very dangerous (Shipton says no word about the rock spur chosen by the Genevese the following spring). It is truly remarkable that an islander like Shipton had been able to discover at the first attempt and at such a distance what we consider the best itinerary. This route by the Lhotse Glacier seems quite natural and obeys the very orthodox principles which governed the tactics of our ancestors: to follow the ice and snow routes as high as possible. In the Himalaya it is always preferable to avoid rocks.

It remains for us to mention the important explorations made by Shipton and his companions in the regions neighbouring Everest, to the south of the Tibetan frontier. From a look at the best existing maps[2] one could surmise that much remained to be done and that their explorations were enthusiastic. They were constantly favoured by the fine autumn weather.

On October 4th, Murray and Ward had already discovered the western tributary of the Khumbu, a big glacier descending gently, parallel to the Tibetan

[1] Shipton writes: "This dragon guarding the Western Cwm is now in a restless mood; it is not unreasonable to expect that in the spring he may be found sleeping."

Murray (*A.J.*, Nov. 1952, p. 440) preferred the autumn for attacking Everest, claiming that the winds are less violent and the weather more reliable, but he reckoned that the séracs and the great crevasses of the Khumbu are only practicable in the spring, at least for the transport of the loads. He thinks (with Somervell) that the danger of frostbite increases progressively with acclimatisation, due to the impoverishment and progressive thickening of the blood, phenomena which result from the lack of oxygen, and that this thickened blood does not circulate as freely in vessels that are contracted by the cold.

Murray concludes his article by a note on the advantages and disadvantages of the proposed itinerary, but his theories are already outdated by the experiences of 1952 and have no more than a retrospective value. Shipton, on the other hand, was much more reserved in his conclusions.

[2] These maps were two; *Everest and Environs*, on a half-inch scale, published by the Survey of India in 1930. The other had been drawn on a scale of about 1:50,000 by the R.G.S. on the basis of the air photos taken on the Houston flight of 1933 but had never been published.

border, magically replacing the great ridges that the map-makers imagined to hang perpendicularly along this frontier. The Sherpas claimed that by ascending this tributary glacier one must arrive at a pass beyond Pumori and be able to cross over to the West Rongbuk Glacier; but it seems this was not so.

In order to save time the expedition divided its tasks. While Shipton and Hillary descended to Namche, Murray, Ward, Riddiford and Bourdillon, with six Sherpas, began to ascend this tributary, which they did not name, but which on our map *(Mountain World*, 1953, p. 59) we have called Chakri Kang (Ramparts Glacier), bounded on the south by the rock ramparts which separate it from the Chola Khola. (See map page 26.)

As the Sherpas were not numerous enough to transport fifteen days of provisions and all the equipment, it was necessary to establish a shuttle-service which lost a great deal of time. Nevertheless, on October 11th a camp was pitched at the top of this new glacier in view of a pass which we will call the Chakri La (c. 20,000 ft.). The Ramparts Glacier (Chakri Kang) presented no difficulties, nor did this side of the pass. From the pass they discovered to the west another large glacier covered with stones, descending from the Tibetan frontier and turning westwards to join a still greater glacier. Nothing of this was to be seen on the map. In reality, the Chola Khola opens up much more to the south, much reduced in all its proportions.

The descent from the pass was not at all easy. The steep rocks were deeply covered with snow. They formed a sort of rib where it was necessary to cut steps for 300 ft. Lower down, the rocks were very much broken. The sahibs had to carry the loads themselves and the Sherpas had to go backwards and forwards to the next camp which was set up on the glacier on the western slope.[1]

Not knowing where this glacier was leading, they followed the moraine on its right bank as far as the confluence with the main glacier, equally unknown. The fog having risen, they recognised to the north-west a more familiar great mountain, which was none other than Cho Oyu (26,750 ft.). As to the main glacier, it is called the Ngojumba, the principal source of the Dudh Kosi, and has its source in the immense basin contained between Cho Oyu and Gyachung Kang (25,910 ft.). Its eastern branch descends from the Nup La (19,407 ft.), the frontier pass which had been reached from the Tibetan side by Hazard and native topographers in 1924. On the Nepalese side the whole map must be remade and Cho Oyu shows no practicable route.

On the 14th, while the Sherpas were resting, Ward and Bourdillon made a reconnaissance towards the Nup La and ascertained that it is barred by a formidable icefall. A whole day was required to reach the foot of these séracs, a veritable

[1] This glacier is called "Guanara" in *The Times Supplement* of May 5th, 1953, a name which has nothing Tibetan about it. To the south, the summit which it encircles is known as Kang Cho. Its height is more than 20,000 ft.

chaos of shattered ice, very steep and worse than the Khumbu Icefall. On the 16th, at 9 a. m., Riddiford, in the lead, began the attack. At first all went well, but higher up the séracs pressed together as closely as trees in a forest and it was impossible to see where they were or where they were going. Terrible cracking noises were to be heard and blocks of ice fell into the fathomless depths. Nevertheless, they succeeded in crossing this great barrier, 1300 ft. high, only to discover that there was a second fall before the pass. There was no time to continue and they had to beat a retreat.

Out of curiosity they explored a pass opening to the south of the Guanara Glacier in order to see if it gave on to the Chola Khola. It was only by pushing still further east, from a second pass, that they were able to discover this mysterious gorge, much smaller than the map shows. (Se map page 26.)

After descending the immense Ngojumba Glacier and the banks of the Dudh Kosi, the party reached Namche in a riot of autumnal colours. On October 25th they rejoined Shipton and Hillary at the Khumbu base. This is all we know of this great circuit and truly it is little.

Let us now follow Shipton and Hillary in their exploration. Here Shipton seems in his element but he does not enter into details. He was seeking to establish a connection between the Khumbu Glacier and that of Kangchung, explored in 1921. The Sherpas claimed to know a pass leading from the top of the Imjya Khola to the Tibetan village of Kharta. It was a question of finding this pass.

While descending to Namche to order provisions, Shipton passed through Khumjung (c. 13,000 ft.), which, it appears, is twice as big as Namche and completely surrounded by considerable crops. Thereafter he ascended the course of the Imjya Khola but did not discover any practicable passage for escaping from this *cirque* in the direction of Tibet, not even in order to connect with the Barun Glacier.

Turning south, he succeeded in crossing a pass of about 19,700 ft. opening upon the watershed between Imjya and Hongu but well to the east of Ama Dablam. This pass is difficult and it was only traversed with reduced baggage: three Sherpas and three days of provisions only. Shipton thus descended on to the Hongu Glacier and then reached a pass (c. 20,350 ft.) opening in the chain separating this glacier from the Barun Glacier. From this pass Makalu appeared in all its splendour six miles to the north-east. For lack of time, he had to abandon the idea of pushing further.

Retracing his steps, he ascended a western tributary of the Hongu and on October 16th crossed a pass of 19,700 ft. immediately to the south-east of Ama Dablam. The descent of this pass was difficult and required four hours of step-cutting on the ice slopes. Late in the evening the party was able to get out of the

séracs and bivouac. The following day they slept at the village of Dingboche, where the natives had come up to thresh their barley.

On October 18th he returned to his Khumbu base after having crossed the lower extremity of the great south-west ridge of Nuptse. This rapid exploration is summarised in a few lines in *The Times*, and in the *Geographical Journal* there are no more details.

After having forced the Khumbu séracs, the whole expedition descended to Namche, which was in great festivity when they arrived. They had some difficulty in avoiding the numerous invitations and feastings which habitually mark the beginning of November, and especially in persuading the Sherpas to renounce these delights and set off with them again.

Eventually, on November 4th, the expedition ascended the valley of the Bhote Kosi and divided into three parties. While the New Zealanders and Dutt, the geologist, crossed the Tesi Lapcha, Shipton's party continued the ascent to the hamlet of Chule. From there Murray and Bourdillon made off for the Nangpa La to inspect Cho Oyu, and Shipton and Ward forked north-west, ascending the Pangbuk Valley.

On the 6th, the latter climbed to a viewpoint of about 18,600 ft. in order to find their bearings. They were rewarded with a wonderful and very clear view. The principal summits to the east had become familiar to them, but to the west there was a chaotic confusion of unknown peaks. A high barrier had still to be crossed by a pass in order to penetrate the Menlung basin, in the very middle of which stood a superb isolated summit, a little like the Nanda Devi throne in its sanctuary. The pass was named Menlung La (c. 20,000 ft.) and the peak was named Menlungtse (23,560 ft.). It is a splendid pyramid of light granite, higher than Gaurisankar, which is seven miles west. A vast glacier encircles its base and its waters run into the Rongshar, which comes from Tibet.

Shipton and Ward descended the whole of this glacier (they even found there the tracks of the famous *Yeti!*), then ascended south-west to a pass (c. 19,500 ft.) whence they gazed down 6500 ft. into the gorges of the Rolwaling. In this way they were able to disentangle the complicated hydrography of this region up to the Rongshar. The confluence of the Menlung Chu and the Rongshar had already been surveyed on the occasion of the 1921 reconnaissance, so that the connection was established in our geographical knowledge.

Murray and Bourdillon having rejoined them over the Menlung La, the quartet descended the Rongshar (one of the greatest gorges in the Himalaya) and reached Lamobagar on November 14th and Katmandu a week later.

With three Sherpas and four days of provisions, Murray and Bourdillon had ascended the Bhote Kosi to the Nangpa La (19,050 ft.). It appears that the Nepalese glacier issuing from this pass descends to about a mile from Chule, but

it is covered with stones. The tracks of yaks follow the old moraines of its left (east) bank. They went up due north for nine hours, covered nine miles and on the next day took another hour before they set foot on the ice where the yaks had worn a deep furrow. This region seems relatively dry. There had been no snow for weeks and all the surrounding mountains were iced. In four more hours they reached the Nangpa La, a very wide saddle marked by a cluster of prayer flags and affording a fine crossing into Tibet. Murray claims that this pass could be crossed throughout the year when the weather is good. The Sherpas carry small axes to cut steps for their yaks. Cho Oyu is invisible from the Nangpa La. To view it one must descend northwards to the confluence of a glacier flowing from the south-east. From this point Murray sighted at least two possible itineraries: one by the northern ridge and the other by the north-western side, and he writes (in *A. J.*, 1952, p. 450) that this north-western face is the most promising that he had ever seen on a great Himalayan summit. The mountain seemed in excellent condition, but the necessary provisions and sufficient time for an attack were lacking.

After returning to Chule, they crossed the Menlung La and found Shipton and Ward again on the other side. They descended with them to Katmandu.

As to the two New Zealanders and Dutt, the geologist, they had left their friends at Thami to ascend the valley of the same name and to cross the Tesi Lapcha. This is a pass of about 20,000 ft., known to the Sherpas in summer but not easy in November. On the evening of the second day they camped at the foot of the pass in a wonderful amphitheatre of fluted snows. A stone-covered glacier, then some séracs and a steep slope of snow took them to the pass, where a terrible wind was blowing. On the other side the descent was easy and led to a large glacier where they had to camp at 19,000 ft. This was the coldest night of the whole expedition. Several of their Sherpas had already crossed the pass in the past and led the party on to the left bank, but the glacier had broken up and presented an uncrossable fracture. They had to reascend and try the right bank. There they were stopped by an overhanging wall 60 ft. high. Eventually the Sherpas found a slanting ledge in the séracs and everyone was able to leave the glacier before darkness—a hard day.

On November 8th, along crumbling moraines, they reached the valley of Rolwaling (this Sherpa name signifies "furrow") and arrived at the village of Beding, inhabited by lamas. From there they reached Katmandu in eight days, well ahead of the others, Hillary having to return to New Zealand.

Shipton ends his account with these lines which characterise his ideals: "This form of mountaineering, the exploration of unknown peaks, glaciers and valleys, the finding and crossing of new passes to connect one area with another, is the most fascinating occupation I know. The variety of experience, the constantly

changing scene, the gradual unfolding of the geography of the range are deeply satisfying, for they yield a very real understanding, almost a sense of personal possession, of the country explored."[1]

On the return of this successful expedition, Shipton wrote his report and preparations for a great expedition to Everest were begun at once.

But in 1951 the Swiss Foundation for Alpine Research had already made the first move and had obtained authorisation from the Nepalese government to attack Everest in 1952. This authorisation was therefore prior to that accorded the British, from which situation some Anglo-Swiss conflict developed. As it was inconceivable to launch two expeditions to the same mountain at the same time, the Foundation proposed a mixed expedition. But who was to lead it? Ernst Feuz and Dr. Wyss-Dunant set off for London and at a memorable session at the R.G.S., Anglo-Swiss cooperation proved impossible. Eventually the British abandoned Everest for 1952 and sent their expedition to Cho Oyu (26,750 ft.).

We have just seen that this mountain had been reconnoitred in 1951 and that Murray claimed that it was certainly accessible from the north-western side. Unfortunately he was much mistaken and Cho Oyu is still (1953) virgin.

The story of this expedition has been long awaited and the only account that has appeared to date is very incomplete. This complicated campaign is told by a single member of a numerous expedition which was often split up. One needs to have the reports of each party, but they have never appeared. Our only original source is the *Alpine Journal* for May 1953 (which appeared at the end of June).[2]

Besides the conquest of Cho Oyu itself, the expedition had for its object to train its members with Everest in view, to try out its equipment and above all its new oxygen apparatus. Naturally, it was led by Eric Shipton and comprised: Campbell Secord, A. Gregory, Tom Bourdillon, R. Colledge, R. C. Evans, Griffith Pugh as physiologist, and the three New Zealanders, Edmund Hillary, George Lowe and Earle Riddiford.

Leaving Jainagar (Bihar) on March 31st, the expedition reached Namche Bazar in seventeen days by the most direct route (see the map in *The Mountain World*, 1953, p. 44). After leaving a provisions depot at Namche, they quite naturally ascended the long valley of the Bhote Kosi via Thami and Chule (c. 16,000 ft.), where a day of comparative rest was taken. Everything was still very much covered with snow.

[1] *Times* report, Special Supplement, Dec. 1951, 1–16. *Geographical Journal*, June 1952, 117–41 (E. E. Shipton: "Everest, the 1951 Reconnaissance of the Southern Route"). Eric Shipton: *The Mount Everest Reconnaissance Expedition, 1951*; Hodder & Stoughton, London, 1952. *Alpine Journal*, Nov. 1952, 433–52 (W. H. Murray: "The Reconnaissance of Mount Everest, 1951"). *Himalayan Journal* 1952, 19–41 *(idem)*. *New Zealand Alpine Journal*, 1952, 194–205 (E. P. Hillary: "A New Approach to Everest"). *Climbers Club Journal*, 1952, 40–3 (M. P. Ward: "Rolwalinghimal"). *American Alpine Journal*, 1952, 377–81 (résumé and commentaries by Houston). *Alpinisme*, 1952, 51–5 (W. H. Murray: "Everest 1951"). *Mountain Craft*, No. 16, pages 1 and 12 (Murray: "Mount Everest, 1951").

[2] R. C. Evans: "The Cho Oyu Expedition, 1952" *(Alpine Journal*, May, 1953, 9–18). Since then there has appeared an account by Shipton in the *Geographical Journal*, 1953, 129–37 ("The Expedition to Cho Oyu") and discussion, 137–9. For the New Zealanders' story ("Exploration and Adventure in the Himalaya, 1952") see *New Zealand Alpine Journal*, 1953, 4–37.

From Lunak (a few huts at 17,000 ft.) Shipton sent Gregory and Evans to explore the southern approach to Cho Oyu, while Hillary and Lowe were to examine the west side.

The first party, reinforced by four Sherpas, set out for a pass of about 19,000 ft. in the great backbone that divides the waters of the Bhote Kosi and Ngojumba. To the east of this col Gregory and Evans on April 26th found a good viewpoint for studying the southern side of Cho Oyu. It could be seen throughout its width but seemed to them impracticable. The next day they were back in Lunak.

Hillary and Lowe only returned on the 28th and declared that they were less pessimistic regarding the western side. Upon which Secord, Gregory and Evans went up to camp at Jasamba (c. 18,000 ft.) south of the Nangpa La, and climbed two nearby summits (20,013 and 21,100 ft.) to the west of the pass (but the higher of these had already been visited by Hillary and Lowe).

Evans writes as follows: "From here we could form a good idea of the ground and of the problem before us. Cho Oyu presented a long glacier approach, many miles from the nearest fuel, with, at the end, the unwelcome prospect of being too near Chinese territory. It looked, indeed, as if our line of communication or retreat must lie over ground easily reached by any Chinese soldiers who happened to be in the district, and got wind of our presence."

But these lines could have been written in London and at these heights the yellow peril seems to us a little imaginary![1]

On May 6th, after crossing the Nangpa La (19,050 ft.), Secord, Gregory, Bourdillon, Hillary, Lowe and Evans pitched a camp in a glacier depression (19,520 ft.) from which the western slope of Cho Oyu seemed accessible. Next day, over slopes of snow, scree and lastly of ice, despite a gale, they pushed a second camp 1600 ft. higher up. On the 9th Evans, who was suffering from laryngitis, had to be evacuated to Jasamba by Secord. On the 10th Riddiford and Shipton joined the main body and were able to ascertain that a barrier of ice stopped all progress about 1000 ft. above Camp II. The retreat to Lunak was decided upon without further ado. Apart from Hillary and Lowe, all the members of the expedition were suffering from various troubles which were classed under the general name of influenza.

On May 16th Hillary and Lowe returned to Lunak after having climbed two Tibetan summits north-west of Cho Oyu, one of which is marked 22,600 ft. on the map *Everest and Environs* and was quite difficult (see the detailed account in *N.Z.A.J.*, 1953, 11–3). The expedition then divided into three independent parties:

1 Secord, Pugh, Bourdillon and Colledge camped for a week on the Menlung La (20,000 ft.) and tried themselves out with and without oxygen. Bourdillon

[1] Shipton is more explicit and feared that the Chinese command at Tingri had been warned by the numerous caravans that were at this time crossing the Nangpa La. This is why he gave up the idea of pitching a proper base on the Tibetan side.

and Colledge climbed a summit of 22,300 ft. to the south of the pass and named it Pangbuk Peak.

2. Hillary and Lowe descended to Namche, where they loaded up again and crossed the Nup La (19,400 ft.)—the first effective crossing—despite the séracs on the Nepalese side. They made for Changtse (24,760 ft.) but eventually abandoned it (no details).[1]

3. Gregory, Shipton and Evans, with five Sherpas, tried in vain to cross a pass west of Lunak in order to explore the unknown region north of the Menlung La. They then passed south into the Pangbuk basin, descended the Bhote Kosi to the confluence of the Langmoche, the gorge of which looked most interesting. By way of the Thami Khola they then reached the Tesi Lapcha (20,000 ft.) and attempted the summit (20,500 ft.) that rises south of the pass. Instead of descending to the south-west, like the previous year's expedition, they turned north and ascended the Tolam (or Talum) Bau Glacier. The upper névés of this glacier feed the Dudh Kosi to the east as well as the Rolwaling to the west. They are dominated on the north-east by a fine mountain (c. 21,650 ft.) which was also climbed. Shipton being sick, the party retired to Thami over the Tesi Lapcha at the end of May.[2]

After a council of war, the bulk of the expedition returned to England via Katmandu, but Shipton, Evans, Hillary and Lowe were fortunate in being able to continue the exploration begun the previous year in the region of Barun. On June 1st Evans left, first from Thami with Da Tensing (II?) and Annullu, slept at Khumjung and ascended the Imjya Khola. He bought a leg of yak for three rupees, but later learned that this yak had died a week earlier. The first symptoms of the monsoon rendered the weather stormy and threatening. Like Shipton the previous autumn, Evans crossed the Amphu Lapcha, not without difficulty, and reached the Hongu Lake (c. 18,200 ft.), which was still snow-covered. It is the largest of the five lakes which have given the name of Panch Pokri to this region. It is about a mile long. At its south-eastern end the Sherpas built cairns rivaling the symbols devotedly left by the Hindu herdsmen coming from the south (Mera Kharka). Evans spent the night here and deposited provisions before continuing his way with heavy loads towards the Barun Saddle. This is a very complicated high plateau. Not without difficulty, he first of all reached the western depression by a couloir of very broken rocks. Then he had to cross the eastern depression and on June 8th arrived at the famous Barun Glacier and descended its bank (the author does not say which) to a spot (c. 15,000 ft.) where, in the ablation glen at the south-west foot of Makalu, he

[1] See Lowe's account in *N.Z.A.J.*, 1953, 13–23.

[2] Throughout this deployment nothing is said of Riddiford, one of the most active of the first New Zealand expedition to the Himalaya, for the good reason that he had been injured and had had to go home, thus losing the opportunity to conquer Everest the next year with Hillary.

found water, junipers, yak droppings and a *sangar* ("low wall serving as a windbreak"). There Evans spent two nights. He descended further still and found other sangars and abundant traces of sheep, which relieved him of an anxious doubt and luckily confirmed the practicability of the Barun gorges.

Since this point was now cleared up, he ascended again to the Barun Saddle and spent a very cold night in its eastern depression (20,000 ft.). Next day he tried to ascend a snow peak (21,800 ft.) due south of the depression.

On June 12th there was a rendezvous at the Hongu Lake: Shipton, Hillary and Lowe coming from the Imjya Valley, bearing fresh and cheering news of the Swiss attempt on Everest.

On the 13th, ascending all together to the Barun Saddle, they pitched their camp in the western depression (20,500 ft.) whence they climbed a summit of 22,470 ft.[1], north of the plateau. The view was especially fine and interesting upon the main ridge running from Lhotse to Pethangtse. Next day they succeeded on the snow peak of 21,800 ft., attempted earlier by Evans, and then a summit of 21,250 ft., north of the eastern depression. The same evening they camped on the Barun Glacier and the following day ascended the glacier northwards. They reached the incurved saddle west of Pethangtse (22,060 ft.) on the watershed between the Barun and Kangchung. Pethangtse seemed accessible from this side, but a heavy snowfall (June 17th to 18th) prevented any attempt. Makalu seemed totally inaccessible from this side. The party then descended the course of the Barun Glacier. They perceived two herdsmen in process of repairing a sangar but these men made off at top speed and disappeared. Only later were they to encounter the first flocks browsing in this wild valley.

Shipton and the New Zealanders reached the Arun and descended this famous valley in order to connect in the neighbourhood of Dingla with the itinerary of the previous year, ending at Jogbani.

As for Evans, with his two Sherpas, he preferred to make for Darjeeling. Leaving his companions on June 20th, he passed direct from Barun to the village of Hatia (c. 8000 ft. according to Evans, but 6250 ft. according to the ¼-inch) across very wooded country in full monsoon. Then he ascended the Arun for two days, crossed it on a rope bridge (probably east of Chyamtang), then crossed (without saying where) the Lumba Sumba Himal chain and reached the village of Topke Gola, descending the Mewa Khola until opposite Taplejung. Thence over the Singalila to Darjeeling, where he eventually arrived about mid-July.

The high road from Katmandu to Namche Bazar and Darjeeling is thus open. It will doubtless undergo many variations yet. How many centuries will pass before it becomes "classic"?

[1] This barometrical height is doubtful. Lowe's orographical sketch and account give 22,560 ft., but the R.G.S. map 1:50,000 gives 22,820 ft. It stands on the south buttress of Pk. 39 (23,570 ft.), which was christened *Baruntse*.

The Cho Oyu failure is obvious and regrettable, but it should not obscure the high geographical value of this last Shipton expedition.

We must also mention the disastrous Russian attempt on Everest in December 1952 and the searches made in the spring 1953, but for that we will have to wait for an original account, if it ever appears.

Let us remember too that in 1952 the Swiss Foundation for Alpine Research launched two Swiss expeditions to Everest. The first is amply described in The Mountain World, *1953. We have not yet the necessary perspective to comment on them in this study and this task is postponed until later.*

In 1951, W.H. Murray (A.C. 1949, H.C. 1950) had taken a very active part in the Shipton reconnaissance which we mentioned at the beginning of this Nepalese chapter. Having returned to Scotland, he gave such a panegyric on the beauties he had seen that his friends of the Scottish Mountaineering Club (Tom MacKinnon, George Roger, Douglas Scott and Tom Weir) decided to organise a new expedition after the manner of that sent to Garhwal in 1950. Authorisation reached them only in June and the departure by sea took place in August. At the same time the Foreign Office warned them that journeys to Nepal were subject to great restrictions—at least temporarily, but they did not allow themselves to be discouraged.[1]

Katmandu was reached not by plane but partly on foot, following the old road of the Chandragiri Pass. From Katmandu, by Bhadgaon and Dhulikhel, they crossed a pass to reach Charikot, then ascended the valley of the Bhote Kosi (another one!) to the confluence of the Rolwaling Gorge, which interested them particularly. "Nowhere else in the world", writes Weir, "does the Arctic plunge to tropical with such dramatic force."

They stayed for some time in the sacred region of Beding (13,000 ft.) where there are several monasteries and swarms of lamas. The mountains that rise south of Beding are vaguely mapped but have never been visited by Europeans. A camp was set up at 16,000 ft. and a second at 19,000 ft. Of the six Sherpas two were sick. Several peaks were climbed, among others a snow dome of 22,000 ft. by MacKinnon and two Sherpas. Afterwards they took five days to get to Namche Bazar by the 20,000 ft. Tesi Lapcha.

From there they went up to Thyangboche and seemed to have pushed on to Phalong Karpo, but the narrator mentions no place name and seems to want to excite the curiosity of the reader in a forthcoming book which we eagerly await. The return was made via Jubing and a sort of high road leading to Charikot

[1] Until now no detailed account has appeared of this expedition but a vague summary by Tom Weir is to be found in *Black's Bulletin*, published by Thomas Black and Sons (Greenock) Ltd., at Glasgow in the spring of 1953 and called "Coronation issue with Scottish Nepal Expedition Supplement". We can therefore only sketch the route followed by the Scottish quartet.

by four successive passes, the names of which are not given. Let us hope we will soon have a more detailed account, illustrated with the magnificent photos taken by the Scottish quartet.

Garhwal

For those who have no ambition for the conquest of the eight-thousanders (c. 26,250 ft.), the Garhwal is a land full of charm and very suited to small expeditions. It is true that it, too, borders upon Tibet, but the traffic across the frontier passes is commercial above all, and much less official and political than in Sikkim. This traffic is, moreover, a vital necessity for the two adjacent countries. Here, more than elsewhere, one is sheltered from political intrigues.

This is doubtless the reason why the Garhwal remains open to tourists and why climbers have benefitted from it so much in the last two years. We have in fact to record a number of expeditions. Honour to whom honour is due. Chronologically this honour falls to the Lyonnais of Nanda Devi.[1]

In our last chronicle we commented at length on the French expedition to Annapurna and paid just hommage to its organisers and leader. We would like to be able to say as much of the Lyons expedition to Nanda Devi.

Stung by that great success, the Lyonnais also wanted to set out for the conquest of an eight-thousander. A request was sent for K 2, then for Nanga Parbat. But because of the international situation they could not obtain the desired authorisation. They had to fall back on the Garhwal, a little unwillingly, for this poor little Garhwal does not include any summit of 8000 m.

In Roger Duplat, who was to be leader of the expedition, we have to recognise a very strong personality, an ardent spirit, a leader overflowing with life and master of the whole party. Transposing modern alpine technique to the Himalaya, he had conceived this imposing plan: to traverse the two summits of Nanda Devi by ascending via the Tilman route to the culminating point (25,645 ft.); to follow the summit ridge which, about two miles long, joins the east summit (24,391 ft.); and to descend by the Polish route to the Col Longstaff. Why not? In 1903 the Munich climbers had traversed the two summits of Ushba and since then the

[1] *Revue Alpine*, 1951, 18–21 (Roger Duplat: "Brève étude sur le Garhwal"); 1952, No. 371. The whole part is dedicated to the expedition with the following titles: "Assauts à la Nanda Devi (7816 m.), Expédition française à l'Himalaya, 1951" by Louis Gevril (pp. 1–12); "A la Nanda Devi orientale (7434 m.)" by Louis Dubost (pp. 13–9); "J'avais deux camarades" by Jean Guye (pp. 19–22); "Animaux et plantes du Garhwal" by Alain Barbezat (pp. 22–4); "Le matériel de l'expédition" by L. Révollat, who himself created or improved a good deal of this material, among other things the tents and the sleeping bags (pp. 24–8); 1952, No. 372: "Roger Duplat et Gilbert Vignes" by the Abbé Jean Zelweiger (pp. 43–6). *Alpinisme*, Oct. 1951, 286–8 (technical report of the expedition); 289–90 (obituary). *La Montagne*, 1951, 73–4 (obituary); 1952, 9–16 (Louis Gevril: "L'Expédition française à la Nanda Devi") (account almost similar to that in *Revue Alpine*). *Himalayan Journal*, 1952, 60–3 (résumé). All the above articles are illustrated with photographs by Languepin.

J.-J. Languepin: *Nanda Devi; 3e expédition française à l'Himalaya.* Illustrated with 72 plates; XVI and 9 pages of text (including a poetic epitome by Dr. Payan; diagrams and orographic sketches. Arthaud, Paris and Grenoble, 1952.

On the conquest of Nanda Devi by Tilman and Odell in 1936 see our *Le Problème himalayen*, 18–25, and *La Montagne*, 1938, 139 seq. On that of the eastern summit see *Berge der Welt II* (1947), 178–81.

Russians in the Caucasus have accomplished traverses lasting two or three weeks. This would be a magnificent rejoinder on a Himalayan scale.

Thus, for the first time, the traverse of a great Himalayan summit would be realised: this was Roger Duplat's great idea. Unfortunately his vision was too great and he succumbed in the attempt to realise his plan. But let us look at the facts.[1]

The enterprise was called "Third French Expedition to the Himalaya" (the first having been that of 1936 to Hidden Peak and the second that which had just conquered Annapurna in 1950). It included probably the best Lyons climbers of the time, although it is not maintained that the whole party was on the level with its leader. They all seemed galvanised by his faith. Apart from one or two invalids they have all given proof of superb pluck: Alain Barbezat, Louis Dubost, Paul Gendre, Louis Gevril (second), Jean-Jacques Languepin (cinematographer), Louis Payan (doctor), Gilbert Vignes. All were young and enthusiastic climbers who had distinguished themselves for several years by successes on extraordinary routes, especially in the Dauphiny and in the Mont Blanc chain.

The expedition embarked at Marseilles on the *Athos* of the Messageries Maritimes on April 25th, 1951, and were taken to Ceylon. They had to return to Bombay on another vessel, so that with five tons of baggage they did not reach Delhi until the end of May. (This long sea voyage was clearly a fine relaxation, but it is not a remarkable preparation for altitude. Today, the airplane makes it possible to reduce the pernicious sojourn at low level to a minimum.)

On May 27th they reached Kotdwara, the railhead, "a little stupefied by the long journey", and spent two nights in a pilgrims' shelter "a prey to flies and mosquitos and suffering from the proximity of dirty natives, more or less sick". A harsh contact with the Himalaya...

The Sherpas were at the rendezvous: Tensing Norkay as sirdar, Ang Dawa IV ("Chota"), Ang Tsering III ("Pansy"), Da Namgyal II, Da Norbu, Gyaldzen VIII, Pa Norbu and Sarki—that is, eight Sherpas for eight Frenchmen. Major N.D. Jayal accompanied the expedition as transport officer.

They went up to Chamoli, in the valley of the Alaknanda, terminus of the motor road, in three trucks, and then with mules and coolies to Lata (7550 ft.), a miserable fly-infested village near the exit from the Rishi gorges. There it was very difficult to find coolies. A hundred were needed and the best had to be sought as far as Niti, on the road to Tibet.

So as not to delay longer, the expedition started marching on June 5th, in several separated columns. Between Lata Kharak and Dibrugheta they had to traverse two passes of 13,910 ft. and 13,520 ft. (with a first splendid but intimidating view of Nanda Devi, which seemed formidable). On the other side the

[1] We wonder if Duplat had ever seen the photograph taken by Bujak from the eastern summit, showing the summit ridge which joins it to the culminating point. This photo appears on plate 62 and shows the difficulties of this traverse.

snow was still deep and certain coolies who were badly shod (or not shod at all) preferred to abandon their pay and return home—which provoked some irresolution and great annoyance.

Facing the turbulent waters of the Rishi, these backslidings increased and a rout ensued, as on almost all previous expeditions. They had to construct a footbridge and continue along the left (southern) bank, where they found some cairns that had been built by Tilman in 1936.

On June 18th the Base Camp was set up at 16,000 ft., at the same spot as in 1936. On their arrival, the respective columns proceeded to execute the orders received for an immediate attack.

Dubost, Gendre and Languepin went to pitch two tents very quickly on the Col Longstaff (19,390 ft.), while Gevril and Vignes began to put up the successive camps on the Tilman route. Then they all took turns on this route (Camp I = c. 18,770 ft.; Camp II = c. 20,000 ft.; Camp III = c. 21,160 ft.).

The weather was magnificent and Duplat decided to hurry the attack. With Vignes as second he went straight up from Base to Camp II where he slept the night of June 27th. The next day he raced past III and pitched IV at about 23,600 ft. (that is, a difference in height of about 3600 ft.!) with Ang Dawa and Da Norbu. On the 29th he sent the two Sherpas back with the following note:

"June 29th. Anticipate summit noon. Bivouac below eastern summit. Tomorrow eastern summit noon, sleep at Longstaff. From our camp pitched at the top of the barrier of slabs overlooking Camp III we send back Ang Dawa and Da Norbu sick. Look after them. After tomorrow evacuate the camps by Sherpas to Camp I, by coolies between I and Base. Bring back everything. Gil and I have severe headache, but apart from that all goes well. Camp about 7500 m.? Roger."

On that day, at about 2 p. m., Gevril in fact caught sight of them: "Up there below the summit, two figures that were moving and making rapid progress. Their extraordinary speed at that height led us to think that their condition was still excellent." This was the last that was seen of them, for shortly afterwards mist invaded the summit. This glimpse recalls what Odell saw of Mallory and Irvine when they disappeared on Everest in 1924.[1]

These movements and this extraordinarily rapid ascent presuppose an automatic and easy acclimatisation, perhaps due to certain secret drugs. Not a word about mountain sickness, nor respiratory difficulties, from these two climbers who had arrived in the Himalaya for the first time and had not given themselves a day's rest. Nothing more than headache at Camp IV (23,600 ft.): it seems hard to believe!

[1] Despite all the inanities published in *Match* and *Samedi Soir*, there is no proof that Duplat and Vignes reached the western summit (25,645 ft.). The papers claimed that they might be the prisoners of some wild and unknown tribe where they had strayed!

Much more careful and much less optimistic about the outcome of this adventure, Gevril took care not to break Camp III; on the contrary, he stayed there with Barbezat and sent back the two exhausted Sherpas to Base with the order not to break up for the moment. According to the Sherpas, Duplat and Vignes were not even roped and had no crampons on their feet when they set off! Duplat wore low boots with crepe soles and gaiters!

The whole of the 30th passed in scrutinising the ridge between the two summits, but nothing was seen to move. In the course of the afternoon Languepin, Jayal and Da Namgyal joined them with two tents. On July 1st the fine weather was maintained, with a sea of cloud at 20,000 ft. Filled with anxiety, Gevril left on reconnaissance with Da Namgyal and ascended 1000 ft. in the rock barrier overlooking the camp. With his glasses he examined the summit ridge in all its details, but in vain. The provisions were exhausted; he descended to base, where he arrived on the 3rd.

The idea of an accident began to grow upon the party. On July 6th Gendre, Languepin, Da and Pa Norbu left for Col Longstaff. On the same day Dubost's party reached the eastern summit. Let us briefly summarise this *second ascent of the eastern summit* (24,391 ft.).

In 1939 this had been conquered by the Poles *(Berge der Welt*, 1947, 178–81). On June 28th, in variable weather, Dubost and Payan, with Tensing, Gyaldzen and Sarki went to camp at the foot of Col Longstaff, which was under a great deal of snow. The departure was very early because of the danger of avalanche. Five hours sufficed to ascend to the Col where there were already two tents. Immediately above the Col are two large gendarmes that had already given trouble to the Poles. This time, as a result of heavy snow, it took eight hours to reach the camp site beyond the two towers and a great deal of time to set the camp up. A day of rest in doubtful weather was passed in scrutinising the summit ridge of the mountain through glasses. Nothing could be seen, but there was no anxiety yet.

On July 2nd, with the intention of making the track as high as possible, Dubost and Tensing left without loads. They caught sight of numerous occupants at Camp III and they asked themselves if Duplat and Vignes were perhaps back from their attempt. On returning to Camp, Tensing being tired, it was Dubost who had to descend alone to Col Longstaff to seek an extra tent and bring it up. He covered in one hour what had required eight hours the first time!

Plate 55 : Longstaff's Col–Nanda Khat with Nanda Kot in background.

Plate 56 : Top : View from Point 6468 (21,215 ft.) NNE of Trisul : Dunagiri (7066 m., 23,175 ft.) to the left and Purbi Dunagiri (6489 m., 21,285 ft.) to the right. Bottom : Unclimbed peaks in Garwhal (adjoining the top picture to the right) : Changabang (6864 m., 22,515 ft.), Kalanka (6931 m., 22,735 ft.) behind under the streak of cloud, Tirsuli (7074 m., 23,205 ft.), Hardeol (7151 m., 23,450 ft.), Point 6992 (22,935 ft.).

On the 3rd they rested. The two Sherpas who had gone to fetch supplementary provisions from base returned. On the 4th the party left at 7.30 on two ropes: some immense cornices forced them to make dangerous traverses on the southern flank. Arriving at the last glacier terrace at the foot of the summital rock ridge, two tents were easily installed by levelling the snow. The day of the 5th was fine but very windy. Dubost, Payan and Tensing ascended the névé as far as the distinctive barrier of rock that overlooks it. But the infernal wind very soon obliged them to halt and to pitch their tent a little below the site of the Polish Camp V. There, shivering, they spent a very bad night. Payan's feet became numbed and he abandoned the final attack; he was to remain in the tent as "support", while Dubost and Tensing were to force their way on to the final ridge. Ice-covered ledges and rocks led to the foot of the great shoulder, which was ascended direct, then a succession of cornices and a further shoulder precede the summit. Their feet and hands became even colder. They hesitated, but the summit seemed so near that they continued despite all the risks. The time of their arrival at the summit is not even indicated, and there are no photographs because they had not taken a camera with them. Joy at the victory was very subdued: no trace could be seen of the two vanished men, but a last hope remained—perhaps they had given up.

On returning to the upper camp, they rested for several hours and they swallowed some comforting warm drinks. But they had to get to Camp II at any cost. After losing themselves in the fog, they finally got there and were reunited with their two Sherpas. The next day, at Col Longstaff, the tragedy was confirmed; Gendre informed them that the two friends had not returned.

On July 8th they were all together at Base and were forced to accept the evidence: there was no further hope of finding their companions alive. Conscientiously, Gevril decided to go and examine the foot of the north face, but he ran up against the uncrossable Rishi and narrowly missed being drowned. Meanwhile Gendre had engraved the names of the two vanished friends on a slab and on the 11th the final retreat began.

Roger Duplat was 32 years old. He was the complete mountaineer in every sense of the word. An ardent spirit, of consuming enthusiasm, prime mover of a genuine school of mountaineering, he was regarded in Lyons as the apostle of the mountains. Gilbert Vignes (aged 25 years), his favourite disciple, was likewise

Double-plate 57/58: View from a point 30° 21' N / 80° 31' E at about 5500 m. (18,000 ft.) on the Lassar-Darma watershed of the Panch Chuli massif, with independent peaks as follows: Telkot (6437 m., 21,120 ft.), Point 6334 (20,780 ft.), Point 6312 (20,710 ft.), Point 6904 (22,650 ft.), Ngalaphu (6410 m., 21,030 ft.).

Double-plate 59/60: Continuation of double-plate 57/58 to the right. *Rajramba (6537 m., 21,445 ft.), Chaudhara (6510 m., 21,365 ft.), Ralam Dhura Pass (5630* m., *18,470 ft.), Point 6242 (20,475 ft.).*

of top rank. The two of them formed a perfect rope. Had they reached the topmost point of Nanda Devi? We will probably only know at the next ascent. The idea of this traverse had become an obsession for both of them, a dream in which they luxuriated, an ideal for which they had sacrificed everything to trace in the sky, "at the frontiers of life and death", the finest route that man had ever followed.

They had not foreseen any possible retreat: all the bridges were cut behind them. They had to make the traverse or die. They did not hesitate to do so. The attempt is not lacking in grandeur and truly French spirit.

A sign of vainglory? Perhaps. Suicide? No. Moreover both had died in complete euphorie, the finest death they could wish for: to be carried off in mid-air, at the heart of this glorious sanctuary—a disappearance similar to that of Mallory and Irvine.

Let us end with these words by the Abbé Zelweiger spoken over Duplat's tombstone. "In the summit skies he has found the real answer to his restlessness, to his desire for a beyond, for a frontier surpassed, for a supernatural achievement."[1]

By a curious coincidence, Trisul (23,360 ft.), which had only been climbed twice (in 1907 by Longstaff and in 1933 by Oliver) was visited on two successive days, the 23rd and 24th of June 1951, by two different expeditions which had not consulted one another.

The first had been organised by an Indian, Gurdial Singh, professor at the Doon School, and Roy Greenwood, teacher at Dehra Dun, both members of the Himalayan Club. We had already noticed that the previous year they were both on Bandar Punch, but that only the latter had reached the summit with Tensing Bhotia and his brother. The party further included Flight Lt. Nalini Dhar Jayal (H. C. 1951), Surendra Lall (H. C. 1951) and the three Sherpas, Dawa Thondup, Gyaldzen II ("Mikchen") and Lhakpa Tsering—in all, except for one, a truly native expedition.

To save time they had to forego the idyllic crossing of the Kuanri Pass to follow the hot and dusty pilgrim route, that is to say the railway to Kotdwara, the democratic omnibus to Chamoli and mules to Lata at the foot of the famous Rishi gorges. At Lata all the coolies had already been engaged by the Lyonnais of Nanda Devi, but they were lucky enough to fall in with an illustrious veteran, Kesar Singh, who had climbed Kamet with Smythe in 1931 and Trisul with Oliver in 1933. He was very willing to join the expedition and to recruit some fifteen porters from the neighbouring villages.

[1] Interviewed by a journalist, Lachenal, one of the two heroes of Annapurna, speaking of Duplat said that he knew him intimately: "Death was part of the programme if he achieved victory... When victory is in one's grasp, beyond a certain altitude, death is not an irritation. It is part of a sort of elation which makes one forget everything. Duplat had often spoken to me of death. He said it would be easy after the victory."

One must ask oneself if this special euphorie was not the result of drugs like pervitine or maxiton...

The route via Lata Kharak, Durashi (Dharansi on the map) and Dibrugheta was wild and grand, but classic nevertheless. Close to this romantic clearing, they met Duplat and Payan, and at Deodi they joined up with another Frenchman, Robert Walter, himself *en route* for Trisul, who had the good idea of building a bridge. Never had there been such a congestion of mountaineers in the Rishigorges.

Walter preferred to rest and give priority to the Indians. On the other bank the very dense thickets of rhododendron put up serious opposition to any access to the Trisul Nala. By way of Bethartoli and Deotoli, the native caravan installed its Base at the place called Tridang at 15,750 ft., on the left bank of the Trisul Gal, its Camp I at 17,800 ft., opposite an ice-fall, and Camp II at 18,300 ft.

On June 22nd the fog forced the two leaders to camp at 19,500 ft. (the other two having gone back to Base with mountain sickness). This camp should have been very close to the north ridge but the height seems too little.

On the 23rd the dawn came clear but cold and they did not leave until 8.45 a. m. The ascent was slow, regular and interminable, on hard and perfect snow, with old Thondup in the lead encouraging his companions. A little below the summit, Gyaldzen gave up because of headache. At 4.20 p. m. Gurdial Singh, Greenwood and Dawa Thondup arrived at the topmost dome of Trisul and were able to look upon an astonishing view: all the great summits rose like islands from the sea of cloud that lay at about 22,000 ft. The same evening at 7 p. m. the party was back at Camp II.

This expedition had been very carefully prepared by Gurdial Singh, to whom the whole success was due. The expedition used and tested Indian Army material and did not cost more than 4000 rupees altogether. We believe this to be the first time that an Indian amateur has reached a summit of 23,000 ft.

Afterwards the expedition prospected the approaches to Hathi Parbat (22,070 ft.) and achieved the second ascent of Rataban (20,230 ft.), but no word is to be found on this subject in the three accounts which have appeared on the ascent of Trisul.[1]

Robert Walter, a doctor from Pondichéry, is an experienced man who plans small and very light expeditions. He had already in June 1949 shown proof of this by succeeding in the third ascent of Pauhunri *(Berge der Welt*, VII, 159–60). He was to give us further proof on Trisul. This time he was quite alone, except for a single Sherpa, Nyima Tensing (No. 149).

On June 5th he reached Lata (without telling us by what route) with two mules carrying two sacks containing all his equipment, material and provisions for a month and a half. There he was delighted to find his fellow Lyonnais and he stayed a week in order to acclimatise himself and give priority to the others.

[1] *Himalayan Journal*, 1952, 112–4 (R. D. Greenwood: "Trisul 1951"). A popular account by Surendra Lal appeared in the *Sunday Statesman* of August 12th, 1951. *Mountain Craft* No 20, pages 4–6 and 20 (N. D. Jayal: "Trisul 1951").

With only five coolies he followed the classic route. His tale is very lively.[1] Leaving the path of the sanctuary of the goddess Nanda on his left hand, he descended to Deodi on the Rishi, where a day was passed in building a bridge of tree trunks. It was here that he was overtaken and passed by the Indian expedition of which we have just spoken and the tracks of which he was more or less to follow.

After camping at Bethartoli (12,540 ft.) he crossed the glacier of the same name upstream from its confluence with that of Trisul (which proves the inaccuracy of the map, according to which the Trisul Glacier stops at 14,050 ft., more than a mile from the Bethartoli Glacier). On the evening of the 18th he set up his base a little below Tridang, sent his five coolies back and remained to face Trisul alone with his Sherpa. From that moment his progress became very slow, doubtless intentionally, with a view to acclimatisation. He ascended the left (W) lateral moraine of the Trisul Gal, a moraine that incurves to the right and which brought him eventually to the north ridge of Trisul. His last camp (IV) was at about 20,000 ft. (but this figure must be too low, like Greenwood's, unless the map is wrong).

On June 24th they left at 7.15 a. m. The weather was splendid but cold. After a slow, very regular ascent they reached the summit at 3.20 p. m., where they remained for eighty minutes to take photographs during the breaks in the sea of fog. The descent by the same route was uneventful. But the swollen torrents obliged the two expeditions, now united, to cross successively the Trisul torrent (where Walter unluckily lost his precious baggage), the Rishi and at last the Ramani in order to regain the normal Dibrugheta track.

Walter's experience is interesting. It tends to prove that an ultra-light expedition can succeed on easy summits of 23,000 ft. and that in short there is no great difference between Alpine and Himalayan tactics. Just like the Indian party, it advocates the slow progressive acclimatisation as opposed to the "rush tactic" of Longstaff, who left a bivouac at 17,400 ft. and ascended 6000 ft. in one stage! (See the Trisul article in our study of altitude records, *Berge der Welt*, 1947, 137–40.)

By strange chance, the monsoon was late and comparatively mild in the Garhwal that year (1951). The real rains did not begin until the end of July and until that time the fine weather favoured the few parties that were still frequenting the region.

After Nanda Devi and Trisul we have still to note here the New Zealand expedition in the Kamet massif. Its leader, Earle Riddiford, has honoured us by

[1] *Alpinisme* (G.H.M.), 1952, 56–62. The photo on page 61 is unfortunately reproduced the wrong way round but thanks to the kindness of R. Walter we have been able to obtain a proper copy which we publish on plate 56.

giving us the first story in our annual and there is nothing much to add to this excellent narrative.[1]

The party was composed of four young New Zealanders, accustomed to the rough mountaineering life of their country, and they showed that they were real explorers, not simply climbers on holiday. Abi Gamin (24,130 ft.) having been conquered the previous year by Dittert and his friends, their choice fell quite naturally and by deduction upon Mukut Parbat (23,761 ft.), formerly known by the name of "Western Ibi Gamin", the highest summit of the Garhwal that was still virgin. Not only did the expedition have the chance of conquering this formidable neighbour of Kamet, but it laid hands also on a half-dozen of its satellites, climbing three summits of 6000 m. and three of 6000 m. It must be said that these satellites are much easier than Mukut itself, which remains a very fine conquest. Instead of doing the immense detour through the Mana Pass and the Tibetan side (evidently much easier) they concentrated all their efforts in the Chamrao basin (eastern tributary of the Saraswati) and attacked all their objectives from that side without letting themselves be discouraged by the apparent defences. The approach march was thus reduced to a minimum and all the attacks were made simply by moving the camps in the double glacier amphitheatre of Chamrao, which was excellent strategy.

Otherwise we must go back to the original account by Riddiford, which really leaves nothing to be desired and which one can follow easily on the two maps already mentioned.

In his story Cotter quotes this verse of Flecker's from *Hassan*, which appears to us to be very appropriate to the Garhwal:

We are the pilgrims, master; we shall go
Always a little further; it may be
Beyond that last blue mountain, barred
With snow.

Before leaving this massif we must say a few words about the 1952 expedition to Kamet, an expedition directed by Major-General H. Williams, Chief Engineer in the Indian Army, which had as its object the introduction of native officers to the high mountains.[2]

[1] *Berge der Welt*, VII, 129–44, and photos pp. 251–4 (H. E. Riddiford: "Der Mukut Parbat und seine Trabanten. Erste neuseeländische Himalaya-Expedition: Garhwal 1951"). See our maps *Garhwal-Ost* and *Abi Gamin* which are on the same scale (1:150,000) and are complementary to one another along the Tibetan frontier. *Mukut* = crown; *Parbat* = mountain; *Pachmi* = western; *Dakkhmi* = southern; *Uttari* = northern, in Hindi.

See also *Himalayan Journal*, 1952, 42–59, and *New Zealand Alpine Journal*, 1952, 170–93 (these two stories by Riddiford and his companions are identical). The photo facing page 81 of the *H. J.* was not taken by "Bemie" but by Gabriel Chevalley. See the complete view in *Berge der Welt*, VII, 252–3. This view was taken from Camp V on the N. E. of Abi Gamin. We may mention that all the summits figuring in the photo on page 253 are virgin. It is the same with Mukut Parbat II (23,393 ft.).

[2] Gurdial Singh's account appeared in *Mountain Craft*, No. 18 (Jan.–Mar. 1953)—organ of the Mountaineering Association.

Besides its leader, the expedition comprised Majors Narendra D. Jayal and Mark Valladares, Lieutenants K.C. Johori, P.P.S. Bhagat and Manohar Lal, plus five Sherpas with their sirdar Ang Tsering ("Pansy"?). Nalni D. Jayal and Gurdial Singh (whom we have just mentioned in Trisul) were invited to join them.

At Joshimath they engaged Kesar Singh, who was then 51 years old. Transport was by mule as far as Niti and then by coolie, yak and pony as far as the Base. The itinerary was exactly the same as Smythe's in 1931, by the Raikana Valley and the Purbi Kamet Gal (= eastern Kamet Glacier).

We should recall that the last attempt was in June 1937, when Ridley and three other Indian N.C.Os. reached to 200 ft. above the Col Meade (23,420 ft.); to this we devoted a half column in our chronicle *(Alpinisme*, 1938, p. 270, with an excellent photo of Kamet by Smythe on page 269).

At the Base they found the paved emplacements for the tents and a day of rest was set aside for equipping the thirteen Bhotia porters for high altitude. The next day, June 14th, they had to ascend the long glacier avenue, covered with stones—a slow and tedious march—and then to set up the successive camps. On June 21st, at Camp III, two officers had to give up because of mountain sickness. In the steep and rocky part there still hung a few ropes from 1931, which were naturally replaced by fresh nylon.

On the 23rd, Gurdial Singh and three officers, four Sherpas and six Bhotias crossed this rocky part; then the Sherpas cut steps in the slope above and fixed a 40-metre rope. Camp IV was pitched on a small ice plateau above the rocks at 22,000 ft., but according to the photos and the map this figure is much too high.

The next day (except for Bhagat, who was sick) they struggled all day to ascend the névés and the greatly crevassed glacier leading to Meade's Col. A passing squall made them decide to camp prematurely just below 23,000 ft., that is, at about 450 ft. below the Col. This hitch was fatal.

The morning of the 25th was very fine but very cold. The start was delayed until 8.30 a. m., which was also a mistake. Leaving the Col well to the right, they ascended direct towards the summit. The snow being very deep, it took them four hours to ascend 1000 ft. At midday they were at about 24,000 ft. and, fearing frostbite, they went down again to Camp V at 23,000 ft. Meanwhile, several sahibs and porters had gone down to the lower camps. Williams, who was 54 years old, went up to V and down again the same day.

After several gales, Gurdial Singh and Lieut. Jayal, with Ang Dawa and Ang Temba started off again at 7.55 a. m. on the 28th, in clear, cold weather and deep powder snow. Towards noon the height of Abi Gamin (24,130 ft.) was considerably exceeded, but they could do no more. Nevertheless, after a long halt, Gurdial Singh, Pemba Norbu and Kalyan Singh (Bhotia) pushed as high as possible in the direction of a rock island bordering the left-hand (S) precipice.

Pemba made a great part of the track in the very difficult snow which finally put an end to their efforts. At 3.10 p. m., 650 ft. from the summit, at the point where the last ice slope begins, they had to give up. The slope was already wholly in shadow and the hour was much too late.

The great mistake of this courageous party was to have placed its Camp V too low (23,000 ft.) and to have sought to reach the summit from there in one stage. Even Smythe recommended pitching a last camp between the Col Meade and the summit. This last slope is terribly monotonous and has discouraged all the other parties before and after 1931.[1] Lt. Jayal carried his skis to 23,000 ft. and was able to use them between Camps V and IV. On the return Lt. Bhagat succumbed to an attack of septicemia at Bampa on July 6th.

It is to be observed that the Indians are becoming very enterprising and are keeping up a heartening pace: Bandar Punch, Trisul, Kamet... What next?

Another expedition to the Garhwal, which we have already mentioned, was that of Harrer and Thomas to Panch Chuli (22,650 ft.) from the south-western side.[2]

In the two preceding issues of *Berge der Welt* (VI, 252, and VII, 200) we have mentioned another attempt on Panch Chuli by Kenneth Snelson and J. de V. Graaff in 1950, but this was from the opposite (E) side. The original account has only just appeared in the *Himalayan Journal* and we can now put right certain points in our text.[3]

Snelson distinguishes five summits, thus justifying the mountain's name (Panch Chuli = five celestial torches), just as they figure in our *Garhwal-Ost* map; that is, from south to north: 21,120, 20,780, 20,710, 22,650, 21,030 ft. The first of these he calls *Telkot*. This name, which designates the glacier on the western side on the sheet 62 B of the ¼-inch map, does not figure in the ½-inch map, but it would be practical to keep it, summit names being very rare. Kot signifies end or extremity, which is perfectly suitable here. P. 21,030, which forms the other extremity of the Panch Chuli chain is called *Ngalaphu* by Snelson, the name of the glacier lying at its northern foot (*Nga* = five; *la* = pass; *phu* = upper part of a valley).

These five summits are perfectly visible from the place known as Duktu, which is unfortunately outside our map but figures in sheet 62 B/SE of the ½-inch map. Duktu is quite close to Sona and to the confluence of the valleys known as Darmaganga and Lassar Yankti. It can serve as a centre at ten days march from

[1] Smythe took no less than seven and a half hours to cover the last 1500 ft.

[2] *Berge der Welt*, VII, 282 (Krenek's letter), and 284–6 (Harrer's original version). It was the second attempt by Charlton Thomas upon Panch Chuli, but the first from that side.

[3] *Himalayan Journal*, 1952, 97–100 (Kenneth Snelson: "The Panch Chuli and the Darmaganga"). This account is very brief but seems exact. It is accompanied by a very clear orographic sketch and three photos, including an interesting panorama showing the whole chain from Panch Chuli to the Lassar Peak, of which all the summits are still virgin. Thanks to the films kindly lent by K. Snelson we can publish the left part of this panorama (pages 57–60).

Almora, which one reaches from Ranikhet by car in two hours. Snelson's base was at 12,400 ft. and not at 10,430 ft., as given in our volumes VI and VII.

We note that all the attempts on Panch Chuli have until now been vain. These summits are better defended than our map, which is an interpretation of the English ½-inch, allows one to suppose. The author compares them to Siniolchu, "the most beautiful mountain in the world". All five are visible on his panorama, but it is high time that the airmen took closer views of all these mountains so that climbers can make their plans more precise! In this corner of Garhwal there are hundreds of splendid virgin summits (see plates 57-60).

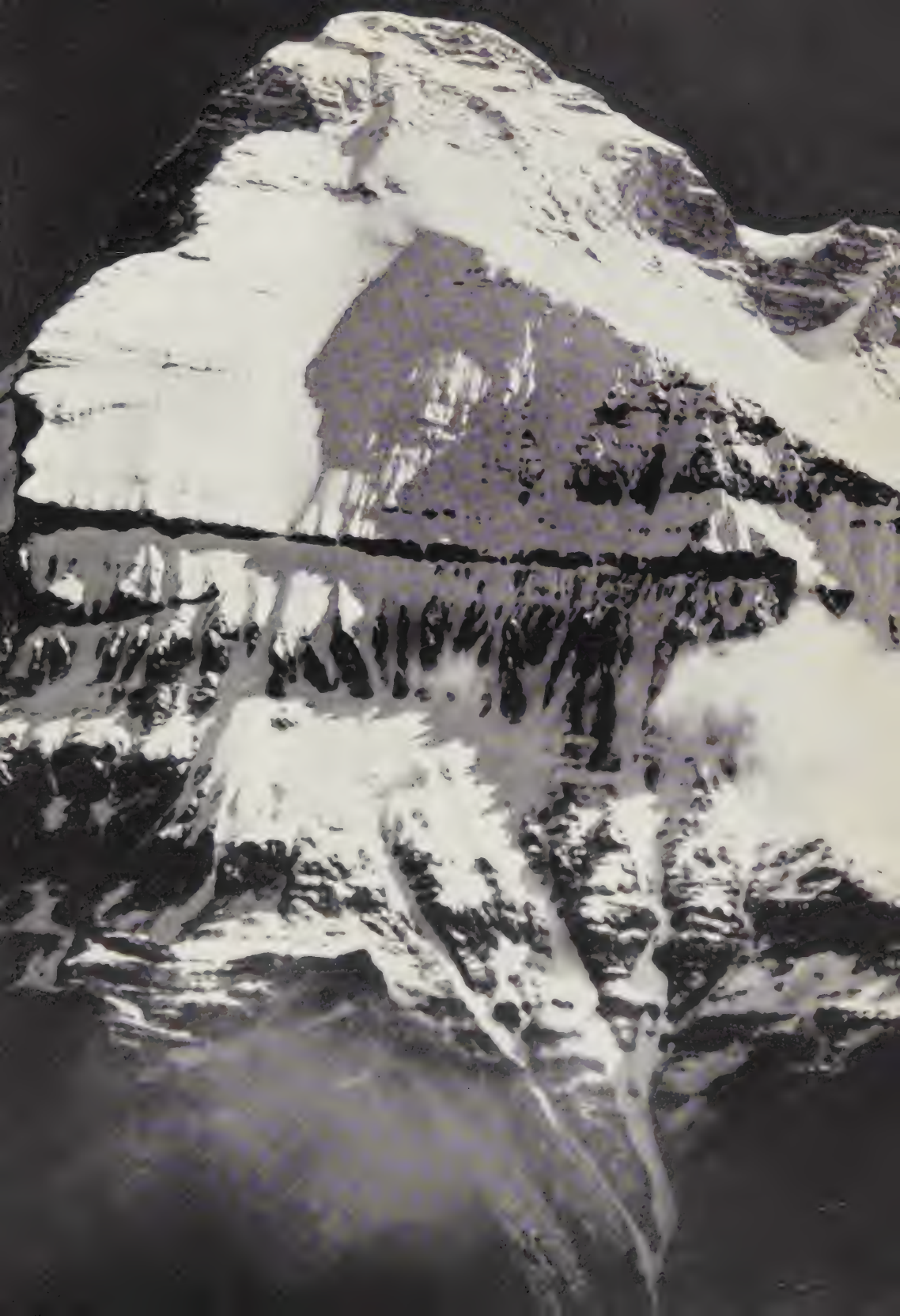
We are glad to have some additional information on the second part of the expedition, which successively visited the long upper valleys of Lassar and Darma. In our last chronicle we had asked if these explorers had read their maps properly or if these were incorrect. They still made use of the sheet 62B of the ¼-inch, which explains the mistake. This map, in fact, shows a summit of 21,217 ft. on the watershed between Lassar and Darma. Now this summit does not exist. At this spot Snelson and Graaff climbed a dome of scarcely 18,000 ft. On the other hand, in the next chain to the east, between Darma and Kuthi, there is a splendid summit which could well be 21,000 ft. Snelson has brought back an excellent photograph, which reminds one of the finest summits of the Dauphiny (see plate 63). This summit is situated quite outside our map and figures neither in 62B nor in the ½-inch.

According to Snelson, *Chiring We* means "hill of long life". *We* is a Bhotia name which is pronounced like "way". It seems to be wholly confined to this region. As to *Top*, it has nothing to do with the English word. It is a Hindi name signifying head-dress, hat or hood, but quite often serves also to designate a summit. The majority of these names seem to have been invented by the topographers of the Indian Survey, in order to distinguish the summits one from another and to fill out their otherwise silent map. *[P.S. Chiring=Tsering.]*

During the spring of 1952 several parties were active in the glacier basins of Satopanth and Bhagirath Kharak, which flow together before giving rise to the Alaknanda. The *Alpine Journal* for November 1952 (p. 533) briefly mentions two attempts on the Nilkanta by its western ridge and one successful ascent of P. 20,260 in the region of Bangneu, the summit being named "Avalanche Mountain" by the Tilly expedition. But so far we have not obtained any details of this campaign.[1]

[1] An account has just appeared in the *Journal of the Fell and Rock Climbing Club* (of the English Lake District). Vol. XVI, No. 47 (No. III), 242–52 (T.H. Tilly and J.A. Jackson: "Return to the Himalaya"). We will return to this later. Actually it concerns P. 20,330 ft. (6196 m.) which was christened "Avalanche Peak".

Plate 61: Nanda Devi (7816 m., 25,645 ft.), from the south.
Plate 62: Nanda Devi (7816 m., 25,645 ft.) from south arête of Nanda Devi East.



The only important victory is that of the Frendo expedition to Chaukhamba (23,420 ft.) which has already been described by Lucien George in French in our *Journal* (No. 1, pp. 50–2). We refer the reader to this.[1]

In June the snow covering was enormous throughout the region and Chaukhamba must have been even more dangerous than usual. Despite this and despite the changeable weather, it was conquered on June 13th by Lucien George (Paris) and Victor Russenberger (Swiss, living in Paris). We congratulate these two conquerors on having come through without accident. The guide Edouard Frendo, leader of the expedition, had to turn back at about 23,000 ft. and Géry at 21,300.

George and Russenberger afterwards took part in the attempt by Bryson and Jackson (Tilly expedition) on the western ridge of Nilkanta. Frendo and other members of his expedition on June 20th climbed P. 6075 (19,930 ft.) to the north of the Bhagirath Kharak Glacier and named it Deo Dakhni. All this has already been told in our *Journal.*

Panjab

In *Berge der Welt*, VII, 281, Ludwig Krenek reported the attempt on Deo Tibba (19,687 ft.) by the Evans expedition in September 1951. Since then (in 1952) this summit has been conquered at last. Here we will summarise its slightly complicated history. It is known that it rises in the Pir Panjal chain (between the provinces of Kulu and Lahul) facing the large village of Manali. Today Manali is very easily accessible by a motor road ascending the valley of the Beas from Sultanpur, a valley which drains the whole western side of the mountain and from which its appearance is striking. It had already struck Bruce in 1912, during his explorations in company with the guide Heinrich Fuhrer of Meiringen.[2]

In 1921, at the time of the new ½-inch survey, it was seen that there was some confusion of names and that the fine summit rising to 20,410 ft. in the Pir Panjal chain was not Deo Tibba but actually Indrasan.[3]

In 1923 the ½-inch sheet 52 H/SW appeared, which set out clearly the whole topography of this massif. It places Deo Tibba 2.4 km. further to the south-west

[1] For a good photo of Chaukhamba, showing the whole of the side that was covered, see *Montagnes du Monde*, II (1947), plate 47, or *Berge der Welt*, III, plate 17.

[2] C.G. Bruce: *Kulu and Laboul*, London 1914, pp. 62 and 159–60. See also the *Alpine Journal*, XXVI (Nov. 1912), 437–40, a brief note giving the use of his time from May 16th to August 14th 1912.

[3] This fact was reported in the *Geographical Journal* for October 1922 by H. Lee Shuttleworth ("Border Countries of the Panjab Himalaya"). According to a letter from Major Banon (Manali), this name should be written *Indarsoh* = Amphitheatre of the rain-god Indar. The Hindi dictionary gives *Indrasan* = "Throne of Indra" and we maintain it as right. *Deo Tibba* = God's Peak.

Plate 63: View from the Lassar-Darma watershed of a striking peak on the Darma-Kuthi watershed, probably Point 6467 (21,217 ft.).

Plate 64: Indrasan (6221 m., 20,410 ft.) from near the Hamta Pass, Panjab. Indra is the Hindu God of Thunder; Indrasan means, therefore, Throne of the Thunder God.

and gives the height as 19,687 ft. As to Indrasan, it remains anonymous with its height as 20,410 ft. It is a pointed rock summit vaguely resembling the Zinal Rothorn, while Deo Tibba swells into a large snow dome. It was probably the rock summit which was attempted by Fuhrer in 1912, but Bruce does not say where he got to on that occasion.

After this attempt the mountain remained sunk in oblivion until the arrival of Lt. J.O.M. Roberts in 1939. We have recorded his odyssey in our Himalayan chronicle *(Berge der Welt*, V, 176–7). Ascending the beautiful valley of Duhangan, he reached the wide pass that opens to the south-east of Deo Tibba and leads straight out onto the vast névés of the Malana Glacier. Since then this pass has been named Duhangan Pass. Its height is about 16,500 ft. Access to the summit being barred by a transverse ridge, Roberts did not push his exploration further, but he thought that the Malana Glacier would provide a possible way to the summit.

In 1940, in the middle of the war, Capt. L.C. Lind (the same who attempted Nanda Kot in 1939) left with a simple local shikari and seems to have followed the same route as Roberts, but scarcely to have pushed further than he did. Lind was killed shortly after in the battle for Singapore, but he had left a note and a sketch with Major Banon, Honorary Secretary of the Himalayan Club at Manali (Kulu). This very brief note only appeared in the *Himalayan Journal* for 1952. It suggests two or three possible routes, but does not say to what point the attempt was taken. Lind does not seem to have had much alpine experience and his time was very limited.

We have seen that in October 1945 three Italian prisoners of war (Bianchini, Fuselli and Mamini) had ascended the Malana Glacier to attempt Deo Tibba from that side. They reached P. 18,076 on the old map, which they named "Punta San Marco" and they deposited there a little mascot representing the lion of St. Mark.[1]

A new reconnaissance took place in June 1950. It is the one described very briefly by E.H. Peck in the *Himalayan Journal* for 1952.[2]

Together with C.R. Patterson, Peck (H.C. 1950) at first followed the Bruce-Fuhrer route through the valley known as Jabri Nal or Piangniru Nala. From a bivouac at the alpage of Piangniru (11,351 ft.), he ascended the right (N) lateral moraine of the glacier of the same name and passed on to the lower plateau of this glacier, but all that he could see from there, and later from a lateral viewpoint further south, only confirmed what he had foreseen, that on this side Deo Tibba presented some difficult precipices.

[1] *Berge der Welt*, V, 189. Fuselli's account of this attempt has appeared since then in *Universo* (organ of the Istituto Geografico Militare at Florence), No. 5 (Sept.–Oct.) 1950, pp. 662–4, unfortunately without photographs. The four preceding numbers and No. 6 contain other articles written by the Italians during their captivity. These are probably the articles which were to form the work announced under the title "Seicento Italiani sull'Himalaya" *(B.d.W.*, V, 186). In the end this book did not appear.

[2] *Himalayan Journal*, 1952, 122–3. E.H. Peck: "Reconnaissance of Deo Tibba."

In May 1951 Peck and his wife resumed the Roberts route which, from Jagatsukh, quite naturally ascends the Duhangan Nala. After a long march they camped in the evening of May 22nd in the middle of the forest at about 9000 ft. and the next day at 12,000 ft. on the immense pastures of Seri, still all white with snow. On the 24th the ascent continued by the snow-covered moraines, passing to the south of the cascade issuing from the little lake known as Chandra Tal. They had to camp before this lake at 14,500 ft. As there was no shelter for the coolies, these had to descend to the first trees (at about 11,500 ft.) and ascend again the next day. Despite the stormy weather, the last stiff ascent was made on excellent snow and led direct to the Duhangan Pass (16,500 ft.), which was reached at 9 a. m. on May 25th; that is, in three hours from the upper camp. Unfortunately, the Pecks had no more time to push further. Instead of attacking Deo Tibba, they contented themselves with climbing P. 17,155, which rises to the south of the pass. It is an excellent viewpoint, which gave them very interesting views of the chain bounding the Malana Glacier on the east and, further still, of the mountains of the Tos Nala, mentioned by Roberts *(B. d. W.*, V, 179–80).

On May 26th the Pecks returned to Manali. The author ends his account with an optimistic note on the possibilities of access to Deo Tibba. He sees no serious difficulty and reckons that this route from the south is much preferable to that of the western slope—which we willingly believe. *(Op. cit.* 123–5.)

The same year (1951), in September, a new caravan set out. It was composed of R.C. Evans (H.C. 1945; A.C. 1948), E. Ker and A.G. Trower (A.C. 1952).[1]

This trio had only six weeks holiday. In five days (one and a half of them at Delhi) they got from London to Manali. They coveted the famous Shilla, but the authorisation was refused them, and even that of crossing the Rohtang Pass (13,050 ft.), the classic pass from Kulu to Lahul.

Our three Englishmen then decided to attack Deo Tibba via Duhangan. Three Sherpas had come to join them: the famous Dawa Thondup, Pasang Dawa (No. 160) and Da Namgyal II, who formed an equally joyful trio. At Manali, Major Banon procured them some good coolies. The complete caravan reached Seri on September 14th, set up its Base there and sent back the coolies. From that moment, the monsoon being ended, the weather was very favourable, except that on almost every day there was slight precipitation at about 4 p. m.

From a camp on the Duhangan Pass the two members of the Alpine Club and their Sherpas made several attempts by the two routes recommended by Lind and Peck. The right-hand ridge which borders the fall of the Malana Glacier and which had been followed by the Italians in 1945 was named "Piton Ridge" because an iron piton was found in the lower rocks. That on the left, the

[1] Our correspondent, Krenek, has already reported the expedition in a few lines in *Berge der Welt*, VII, 281.

watershed between Duhangan and Malana, was named "Watershed Ridge". A camp was pitched on the former at about 16,570 ft., but the party was stopped the first time by a characteristic gendarme and the second time by a rock buttress well below the Punta San Marco (18,076 ft.).

The watershed seemed to offer a more direct way, if not an easier one. From a camp situated at about 16,730 ft. on this ridge, over broken rocks and a snow-covered ledge, the caravan reached the snowy part of the summit ridge and began to ascend it easily. At 10.30 the victory seemed assured, but just before arriving at the vast glacier dome which stands out to the west of the Punta San Marco, the snow became so deep and so treacherous that it was necessary to give up.

On the return to Seri the three friends consoled themselves for their failure by climbing P. 16,316 and two neighbouring summits further east. On October 5th, "full of good mutton and good memories", they left for England.[1]

Strengthened by all these experiences there arose another who seemed to have had more luck and more flair than his predecessors. The caravan was composed of J. de V. Graaff (H.C. 1951, A.C. 1953; a very active explorer whom we have already met on Panch Chuli in 1950) with his wife and K.E. Berrill (who was one of the Anglo-Swiss expedition to Abi Gamin in 1950). Five Sherpas came from Darjeeling: the famous Pasang Dawa Lama, Pasang Sherpa II, Sonam Tsering (No. 106), Tashi Sherpa and Tashi Kiron.

The Base was set up at Seri (12,500 ft.) at the end of July 1952, and Camp II immediately north of the Duhangan Pass at 16,500 ft. Piton Ridge was easily crossed at the point where it forms a notch dominated by a gendarme. From there, by an ascending traverse, the party reached a long couloir between the fall of the Malana Glacier and the rocky Piton Ridge. This couloir presented monotonous screes for 1300 ft. They could fortunately escape from it on the left in order to reach Piton Ridge over rocks and follow it, traversing (or turning?) the Punta San Marco.

A stiff ramp of snow then led to the white ridge connecting this point to the upper névés. Camp III was set up on these névés at about 18,200 ft. and the next day, August 5th, on a fine morning, an hour's marching sufficed to reach the vicinity of the glacier saddle between Deo Tibba and Indrasan. From this point a wide snow crest, cut here and there by crevasses and walls of green ice, rose to the summit. The latter was finally approached from the north-west. Shortly after noon the caravan reached its terminal snow dome, unfortunately in fog, about six hours after leaving camp and just forty years after the guide Fuhrer's attempt.

Graaff was also aiming at Indrasan (20,410 ft.), the conquest of which was very tempting, but he had to give it up, the monsoon being too violent. All this information is unpublished and taken from a note destined to appear in No. 3 of

[1] *Himalayan Journal*, 1952, 118–22; R.C. Evans: "Attempts on Deo Tibba", with numerous photos.

our Journal. We take this opportunity of thanking the author for having provided us with it.

Seen from the heights overlooking Seri on the south, Deo Tibba appears like a large cupola of ice supported on a twisted rock pedestal, a little after the fashion of Mont Velan from the south-west.

As to Indrasan, it has a very lively look according to the photo on plate 64. As it forms the culminating point of all this region, it is probable that it will not be long in falling too—the more so as the way is open and easy as far as its southern foot, where the high névés of the Malana Glacier end.

Before conquering Deo Tibba, the Graaff expedition had climbed three summits in the Dibibokri (Kulu) region[1], crossed several passes to reach Spiti and explored the approaches to the famous Shilla. The expedition did not succeed in reaching the summit in the middle of the monsoon, but later climbed the Mani Kang (21,630 ft., on the frontier of Bashar) whence the whole panorama was photographed. This panorama proves beyond doubt that Shilla does not attain 23,000 ft., perhaps not even 21,325 ft.! It seems that its situation had been "fixed" by two sightings only and its height by only one(!) which probably resulted in a glaring error.[2]

Ladak

No expedition seems to have visited the Karakoram during the years 1951–2.

On the other hand we are happy to record in Ladak a solitary success by a Swiss missionary at Leh, our friend Pierre Vittoz (Lausanne) who succeeded, on August 12th, 1951, in the first ascent of the Stok Kangri (20,083 ft.). This victory is described in *Berge der Welt*, VII, 286–7.

[1] On June 26th, 1952, Graaff and his friend K.E. Snelson, with Pasang Dawa Lama, succeeded in the first ascent of a summit of 20,300 ft. which they named Rubal Kang (Tortoise Peak). Snelson has published a popular story of this conquest in the *Christian Science Monitor* of July 25th, 1952, but we still await exact geographical information.

[2] In a note that follows Deo Tibba in the *Himalayan Journal*, 1952, 126–30, Major H.M.Banon, who was born at Manali and has spent all his life there, does honour to his valley. Except for the motor road that was opened twenty years ago, Kulu has changed little. The majority of its summits are still virgin and unnamed; only the useful passes are frequented by shepherds to cross from one alpage to another (here all the alpages are called *thaches*). The map is rudimentary throughout the high regions. The climber who goes to instal himself at Manali will be able to fan out from there and explore for months. Those for whom age has rendered their ambitions more modest, take note!

CHRONOLOGY OF HIMALAYAN EXPEDITIONS

Continued from *Berge der Welt*, vol. VII, pages 216–218.

Abbreviations: AAJ = *The American Alpine Journal;* AJ = *The Alpine Journal;* Alpes = *Les Alpes*, monthly review of the C.A.S. (Club alpin suisse); Alpinisme = quarterly review of the G.H.M. (Groupe de Haute Montagne, Paris); Appalachia = organ of the Appalachian Mountain Club (Boston, U.S.A., bi-annualy); BdW = *Berge der Welt;* GJ = *The Geographical Journal;* HJ = *The Himalayan Journal;* Journal = *Journal* of the Swiss Foundation for Alpine Research; MM = *Montagnes du Monde;* Montagne = *La Montagne*, review of the C.A.F. (Club alpin français); Mountain Craft = organ of the Mountaincering Association; MW = *The Mountain World;* NZAJ = *New Zealand Alpine Journal;* RA = *Revue Alpine* of the Lyons section of the C.A.F.; RM = *Rivista Mensile* del Club alpino italiano (C.A.I.).

Items in italics relate to new explorations and ascents.

Date	Expedition Leader	Region or range	Principal results (Heights in metres)	Sources
VII 1940	Lind	Panjab	Deo Tibba (6001 m.), reconnaissance (S)	HJ, 1952, 118 and 122
III 1947	Neame (R.A.F.)	Chomolungma	Solo flight	
VI 1950	Peck	Panjab	Deo Tibba (6001 m.), reconnaissance (W)	HJ, 1952, 122–123
1951				
IV–V	Becker-Larsen	Nepal and Tibet	Nangpa La (2x); Chang La (7007 m.)	BdW, VII, 277–279; MM, 1953, 33–34
V	Peck	Panjab	Deo Tibba (6001 m.), reconnaissance (S)	HJ, 1952, 123–125
VI	Duplat	Garhwal	Nanda Devi (?); Nanda Devi E (7434 m.; 2nd asc.)	Alpinisme, 1951, 305 to 313; RA, 1952, No 371; Montagne, 1952, 9–16
VI	Gurdial Singh	Garhwal	Trisul (7120 m.; 3rd asc.). Rataban (6166 m.; 2nd asc.)	HJ, 1952, 112–114; *Sunday Statesman*, 12 VIII 51
VI	Walter	Garhwal	Trisul (7120 m.; 4th asc.)	Alpinisme, 1952, 57–62

Date	Expedition Leader	Region or range	Principal results (Heights in metres)	Sources
VI–VIII	Riddiford	Garhwal	*Mukut Parbat (7242 m.); P.P. 6196, 5962, 5928, 6760, 6328, 5712;* Nilkanta (attempt by W and *NE;* P. 6257 (attempt)	BdW, VII, 129–144 and 251–254; HJ, 1952, 42–59
VII	Harrer and Thomas	Garhwal	Panch Chuli (6904 m.; att. *by W –6500 m.)*	*Sunday Statesman,* 26 VIII 1951; BdW, VII, 282 and 284–286
VIII	Vittoz (solo)	Ladak	*Stok Kangri (6124 m.)*	BdW, VII, 286–287
VIII–XI	Shipton	Nepal	Mt. Everest (8840 m.); *reconnaissance of the Khumbu Glacier –5800 m.; explorations of Nepalese side between Imjya Khola and Rongshar (numerous passes)*	*Times,* Special Supplement, December 1951, 1–16; GJ, June 1952, 117–141; AJ, November 1952, 433–452; HJ, 1952, 19–41; NZAJ, 1952 (No 39), 194–205; AAJ, 1952, 377–381; Shipton: *Everest Reconnaissance 1951*
IX	Evans	Panjab	Deo Tibba (6001 m.), attempts (S)	HJ, 1952, 118–122
X	† Frey	Sikkim and Nepal	Reconnaissance Yalung Gl. and tributaries. Ratong La (3rd crossing. Attempt Kabru –6100 m. Kabur. Gocha La	BdW, VII, 145–154; 275–276
1952				
III–VI	Wyss-Dunant	Nepal	*Mt. Everest (8840 m.) via Khumbu and South Col up to 8600 m.*	MW, 1953, 39–136
IV–VI	Tilly	Garhwal	Nilkanta (att. W); "*Avalanche Peak*" *(6196 m.)*	*Fell & Rock Climbing Club Journal,* No 47, 242-52
IV–VII	Shipton	Nepal	*Cho Oyu (8153 m., att. from W to 6800 m.); Nup La (5915 m.) + a dozen summits between 6000 and 6900 m.; explor. Barun*	AJ, May 1953, 9–18; GJ, June 1953, 129–139
VI	George and Russenberger	Garhwal	*Chaukhamba (7138 m.); Deo Dakhni (6075 m.)*	Alpinisme, 1952, 115; Journal, 1, 50–52
VI	Williams	Garhwal	Kamet (7756 m.), att. –7500 m.	Mountain Craft, No 18 (1953), 4–7

Date	Expedition Leader	Region or range	Principal results (Heights in metres)	Sources
VI–VIII	Graaff	Panjab	*"Rubal Kang" (c. 6300 m.) and two other summits in the Dibibokri region (one of 5850 m.); Deo Tibba (6001 m.); Mani Kang (6593 m.) + 5 probably niew passes*	Private information; MW, 1954
VIII–X	Tyson (Oxford University Exploration Club)	Garhwal	*Gangotri I (6672 m.) Gangotri III (6577 m.)*	Details lacking
?	Gibson	Garhwal	*Exploration between Bandarpunch and Surgnalin*	Details lacking
IX–XII	Chevalley	Nepal	Mt. Everest via Khumbu and South Col –8100 m.	*Forerunners to Everest*, 187-256
?	Nikore	Garhwal	Panch Chuli (6904 m.), attempt.	Details lacking
IX–XI	MacKinnon (Scott. Him. Exped.)	Nepal	*Exploration to S of the Rolwaling; several summits between 6000 and 6700 m.*	*Black's Bulletin*, Spring 1953. Details lacking
IX–XI	Imanishi	Nepal	*Reconnaissance Annapurna–Manaslu. Chulu West (6200 m.)*	MW, 1954
X	Jackson and Dodson	Sikkim	P. 6114 (to N of the Zemu Gl.); Sugarloaf (att. –6400 m.)	Mountain Craft, No. 21, 6-9

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